OKIPAGE 16N

MAINTENANCE MANUAL

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1. CONFIGURATION

1. CONFIGURATION

1.1 System Configuration

OKIPAGE16n consists of control and engine blocks as the standard configuration (See Figure 1-1.)
In addition, the following options are also available.

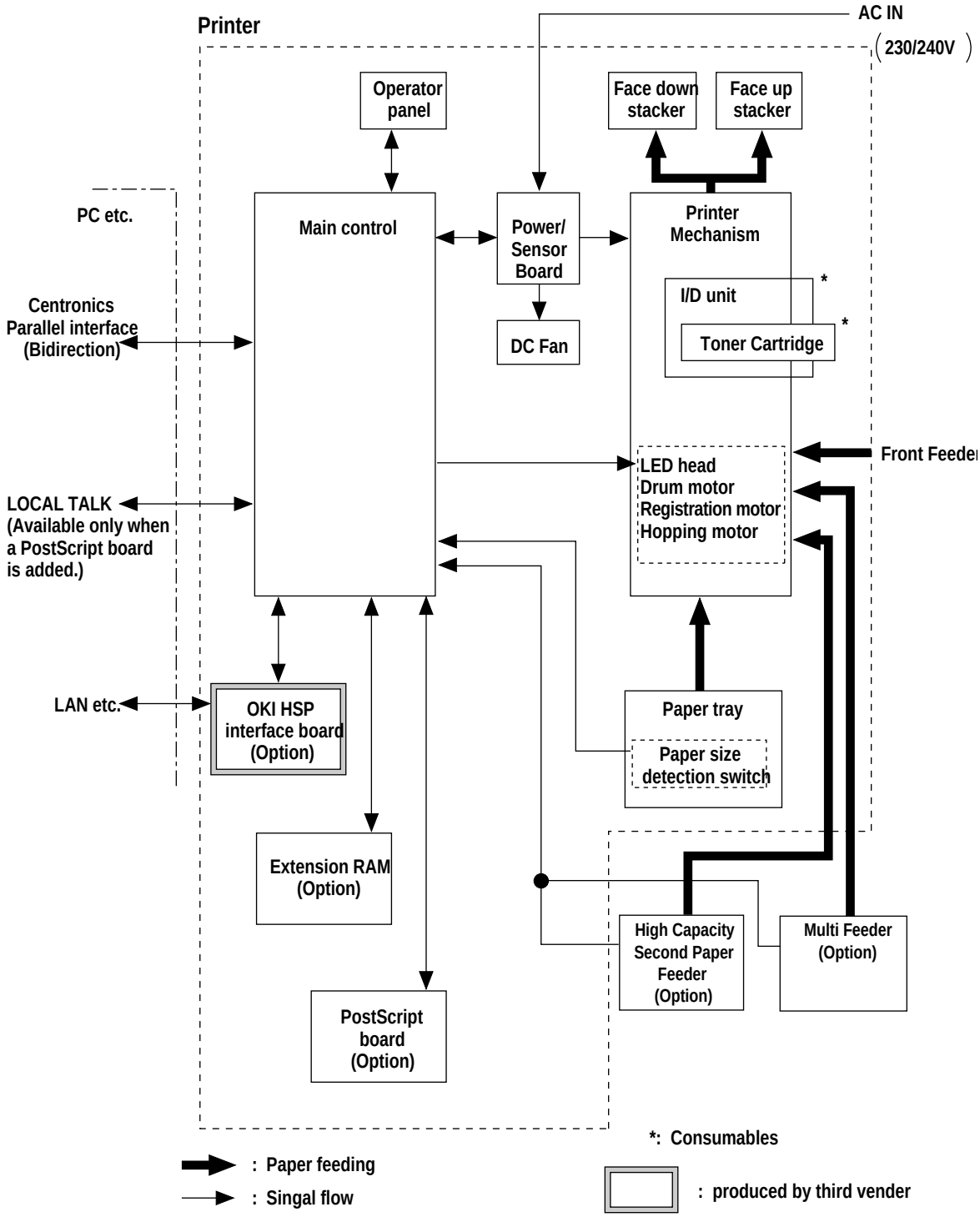


Figure 1-1

1.2 Printer Configuration

The printer unit consists of the following hardware components:

- Electro-photographic processor
- Paper feeder
- Controller
- Operator panel
- Power/sensor board

Figure 1-2 shows the printer unit configuration.

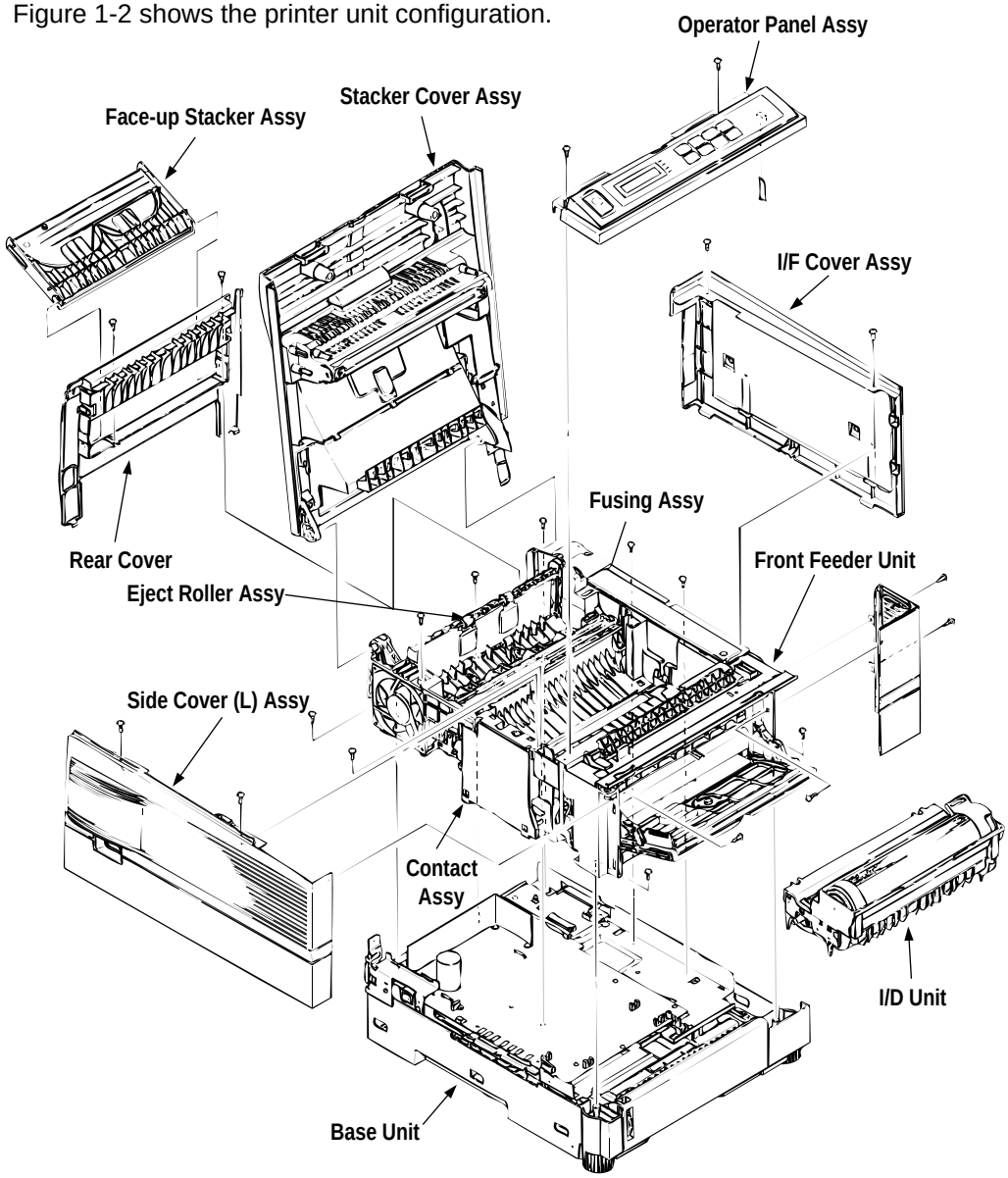
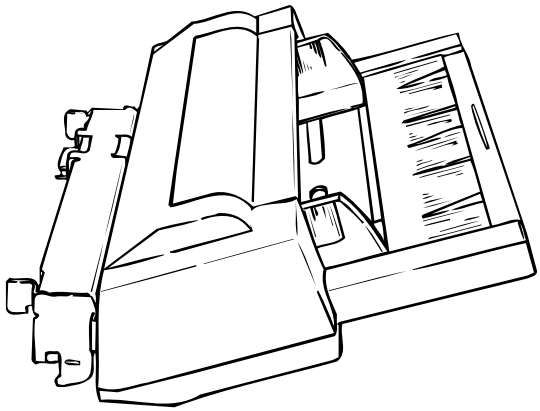


Figure 1-2

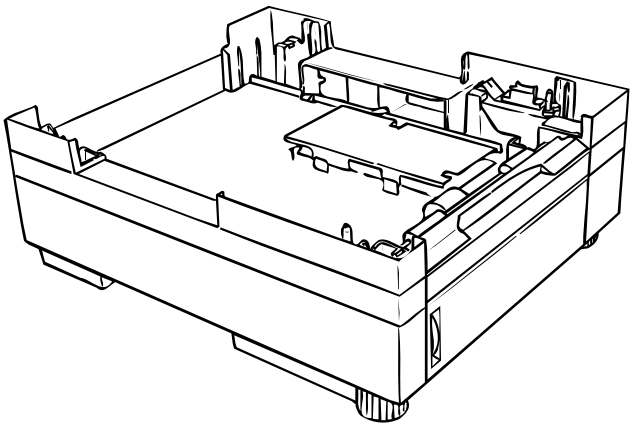
1.3 Optional Configuration

The options below are available for use with OKIPAGE16n. They are sold separately from the printer unit.

(1) Multi Feeder

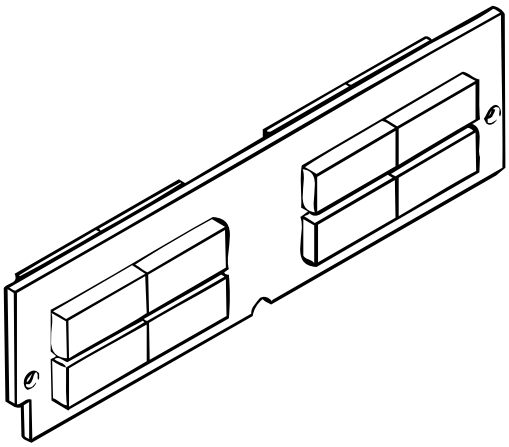


(2) High Capacity Second Paper Feeder

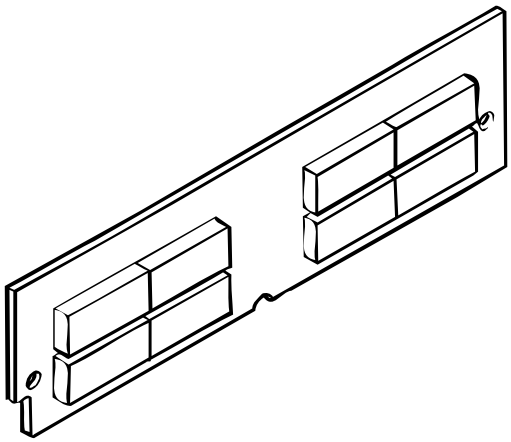


(4) RAM module (72 pin SIMM, 1MB/2MB/4MB/8MB/16MB/32MB)

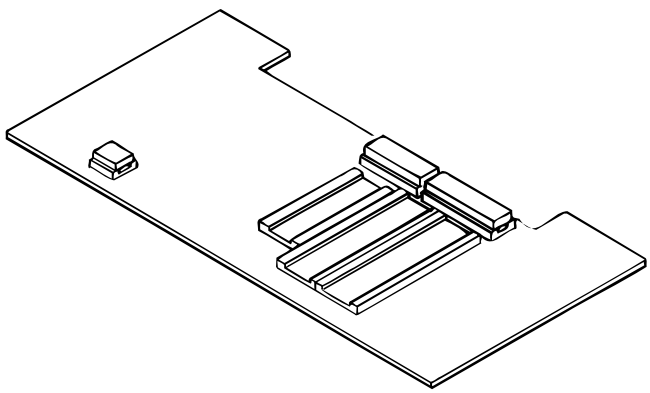
- 16MB RAM module



- 8MB RAM module



(5) PostScript board



1.4 Specification

(1) Type	Desk top	
(2) External dimensions (excludes protruding Portion)	Height 10.6”	(270 mm)
	Width 14.4”	(366 mm)
	Depth 16.9”	(430 mm)
(3) Weight	15.2 kg (33.5 lbs)	
(4) Development method	Dry electrophotography	
Exposure method	LED stationary head	

(5) Paper used

<Type>
- Standard paper
  - Xerox 4200 (20 lbs)
- Application paper (manual face-up feed)
  - Label
  - Envelope
  - OHP paper (Transparency)

<Size>
- Standard sizes
  - Letter
  - Legal
  - Executive
  - Envelope
  - A4
  - A5
  - B5
  - A6
- Applicable sizes
  - Width: 3.4” to 8.5” (86 to 216 mm)
  - Length: 5.5” to 14” (140 to 355.6 mm)

<Thickness>
  - Automatic feed: 16 to 28 lbs (60 to 105 g/m^2)
  - Manual feed: Label, OHP paper (transparency) Envelope

(6) Printing speed	First print:	10 sec.
	Continuous print:	16 sheets/min.
	Warm-up time:	90 sec. [at room temperature 77˚F (25˚C) and rated voltage (120 VAC)]
(7) Paper feed method	Automatic feed or manual feed	
(8) Paper delivery method	Face down/face up	
(9) Resolution	600 x 600 dots/inch	
(10) Power input	120 VAC + 5.5%, –15% (ODA)	
	230/240 VAC + 10%, –14% (ODA/OEL)	

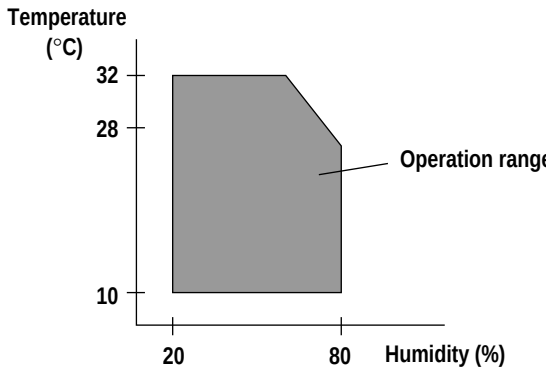
(11) Power consumption

Peak:	Approx. 600W
Typical Operation:	Approx. 220W
Idle:	Approx. 100W
Power save mode:	Approx. 20W

(12) Temperature and humidity

	In operation	Power off mode	During Storage	Unit
Temperature	50 - 90 (10 - 32)	32 - 110 (0 - 43)	14 - 110 (–10 - 43)	°F (°C)
Humidity	20 - 80	10 - 90	10 - 90	%RH
Maximum wet bulb temperature	77 (25)	80.4 (26.8)	———	°F (°C)
Minimum difference of wet and dry bulb temperatures	35.6 (2)	35.6 (2)	———	°F (°C)

Notes:
1. Storage conditions specified above apply to printers in packed condition.
2. Temperature and humidity must be in the range where no condensation occurs.



(13) Noise

During operation:	50 dB (A) or less
At standby:	45 dB (A) or less
Power save mode:	43 dB (A) or less

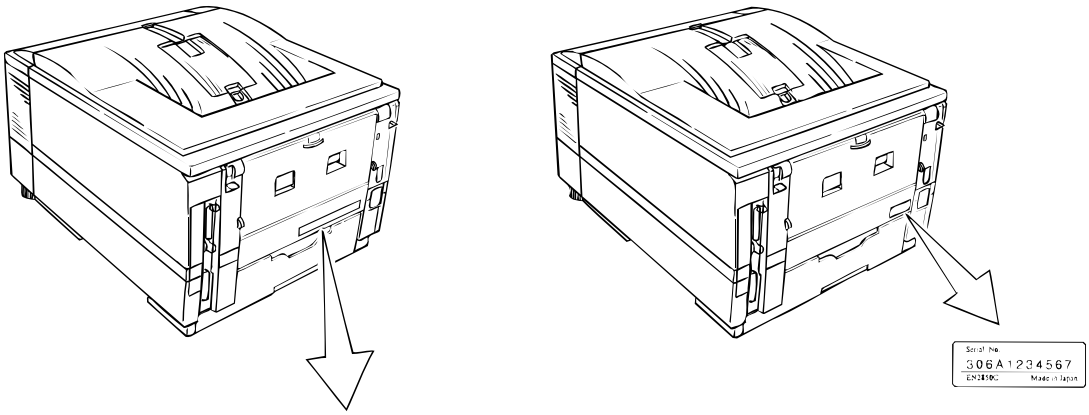
(14) Consumables

Toner cartridge kit	5,000 (5% duty)
Image drum cartridge	30,000 (at continuous printing)
	18,000 (3 page/job)
	11,000 (1 page/job)

1.5 Safety Standards

1.5.1 Certification label

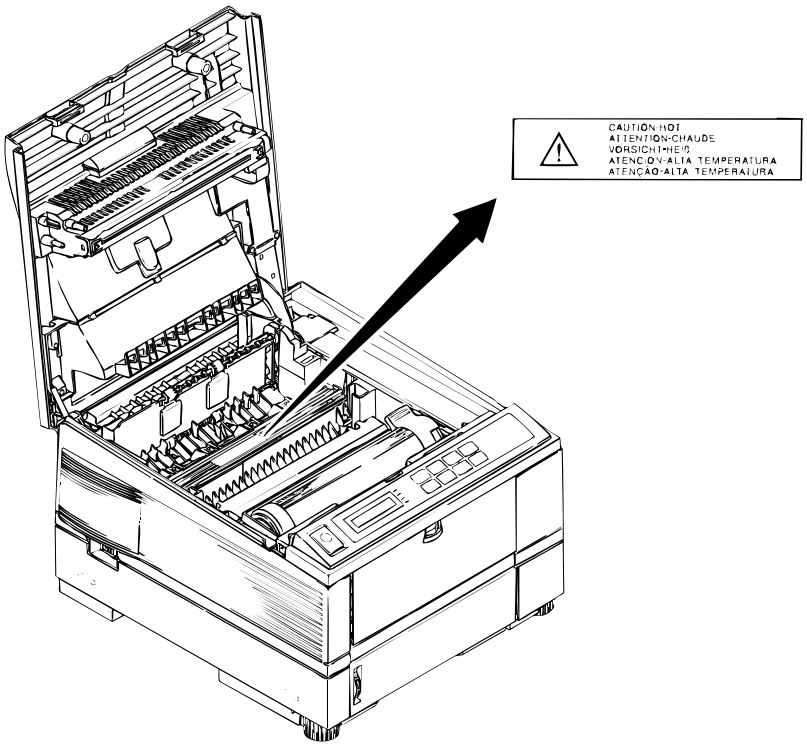
The safety certification label is affixed to the printer in the position below.



Certification Label

1.5.2 Warning label

The warning label is affixed to the portion which may cause an injury to human body. Follow the instructions on warning labels during maintenance.



2. OPERATION DESCRIPTION

2. OPERATION DESCRIPTION

OKIPAGE16n consists of a main control board, a power supply/sensor board, a driver board, an operator panel and an electro-photographic process mechanism.

The control board receives data through a host I/F, decodes and edits the data, and stores the edited data in a memory. After completing edition of one page of data, it references the font memory and generates bit data on the same memory. At the same time, it transfers the bit image data to an LED head in units of one dot line.

The electro-photographic process mechanism prints data on paper.

The operator panel is used for operations and status display.

Fig. 2-1 shows an OKIPAGE16n block diagram.

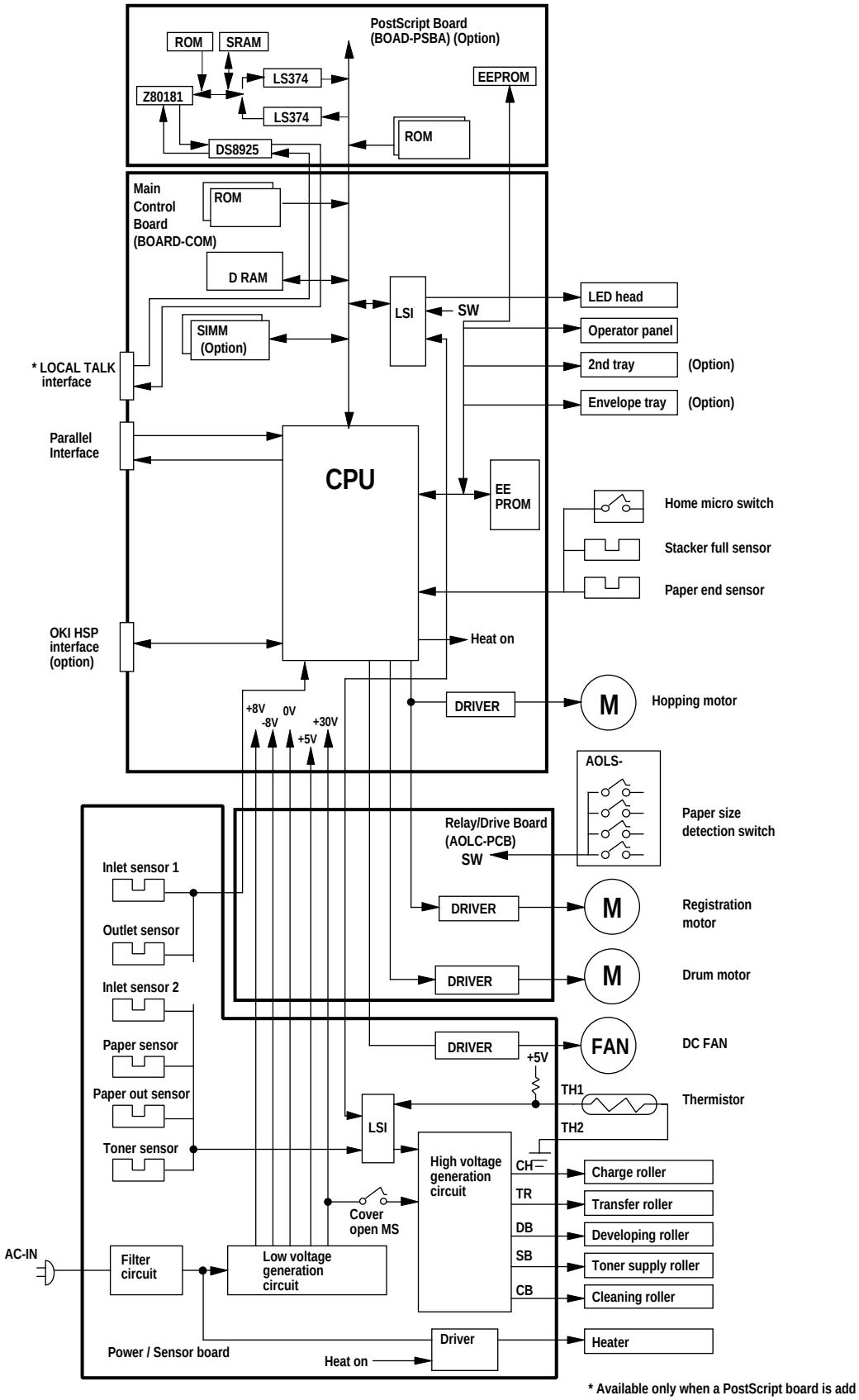


Figure 2-1 OKIPAGE16n block diagram

2.1 Main Control Board (BOARD-COM)

The control board consists of an one chip CPU, LSIs, program/font ROM's, DRAM's, an EEPROM, a host interface circuit, and a mechanism driving circuit.

(1) One-chip CPU

The one-chip CPU is a custom CPU (32-bit internal bus, 32-bit external bus, 32-MHz clock) that incorporates an RISC CPU and its peripheral devices, and has the following functions.

Built-in device	Function
Chip select controller Bus controller DRAM controller	Control of ROM, DRAM and I/O device
DMA controller	Transfer of image data from DRAM to OST LSI
Parallel interface controller	Control of Centronics parallel interface
Timer	Generation of various control timing Monitoring of paper running and paper size
Serial I/O port	Control of operator panel, EEPROM, and options
I/O port	Inputting/outputting of sensor, signal and motor signal
Option I/O interface	Control of OKI HSP interface

(2) Program/font ROM's

The program/font ROM's store the HP IV emulation program and various types of fonts. MASK ROM is used as the program/font ROM's.

(3) DRAM's

2-Megabyte DRAM (4 Mbit DRAM x 4) is mounted as resident memory to be used for storing the program and providing various buffers. This DRAM is expandable up to 66 Mbytes by adding expansion memory (SIMMs). This DRAM provides the areas shown in the following table.

Memory area	Use	Memory capacity setting	
		MENU	Expansion RAM
System area	Working area used for the program	Fixed	Fixed
Raster buffer	Stores converted bit image data	Enable	Expandable
Receive buffer	Stores temporarily the data received from the host interface	Enable	Expandable
Page buffer	Adds print information to the analyzed receive data and stores the resulted data.	–	Expandable
DLL/macro buffer	Stores soft fonts and macro data.	–	Expandable
Font cache buffer	Stores bit map fonts generated by the font rasterizer based on scalable font information	Enable	Expandable

(4) EEPROM

The EEPROM has a 1-kbit capacity and stores the following data.

- Menu data
- Various counter data (page counter, drum counter, fuser counter, etc.)
- Adjustment parameters (LED head drive time, print start position, etc.)

(5) LSI (MBCE31701-040FP-BND)

This LSI is used as a peripheral device of the CPU and performs smoothing compensation (OST) of print image data (300 dpi and 600 dpi). In addition, it transfers serially bit image data for each dot line to the LED head.

(6) Host interface

This printer has the following interfaces to the host.

- Centronics bidirectional parallel interface
- OKI HSP interface (Option)
- LocalTalk interface (Option. See 2.10 for details.)

The single effective interface or the automatic interface select mode can be selected using the menu. If the busy state of the printer continues for a long time period, the buffer near-full control releases the busy status at constant intervals even if the host side is busy so not to cause the interface time-out at the host side.

(a) Centronics bidirectional parallel interface

This is an interface conforming to IEEE-1284 and provides either of unidirectional and bidirectional communications according to each of the following communication modes.

- Compatibility mode
  Unidirectional communications from the host to the printer.

- Nibble mode
  This mode transmits 4-bit wide data from the printer to the host. In this mode, each 1-byte data is transferred in the form of two nibbles using ERROR, BUSY, FAULT, and SELECT signal leads. This mode can provide the bidirectional operation in combination with the compatibility mode.

- ECP mode
  This mode provides the asynchronous bidirectional interface and transmits and receives 1-byte data using eight data signal leads under the semi-duplex control by the host.

When the power is turned on, the compatibility mode is automatically selected. The change to another mode from the compatibility mode is made through negotiation. (When the BI DIRECTION is set to ENABLE in the menu, this change can be performed.) (For the electrical/physical characteristics of this interface, see APPENDIX B)

(b) OKI HSP interface (Option)

This interface (slot) is an OKI unique universal interface that provides the platform to connect various of boards (including those supplied by third venders) such as the LAN connection expansion board and SCSI expansion board.

Any expansion boards compatible with this interface can be mounted on the Control board in the piggyback board from without modifying the program at the printer side. The conceptual diagram of the OKI HSP interface is shown in Fig. 2-2.

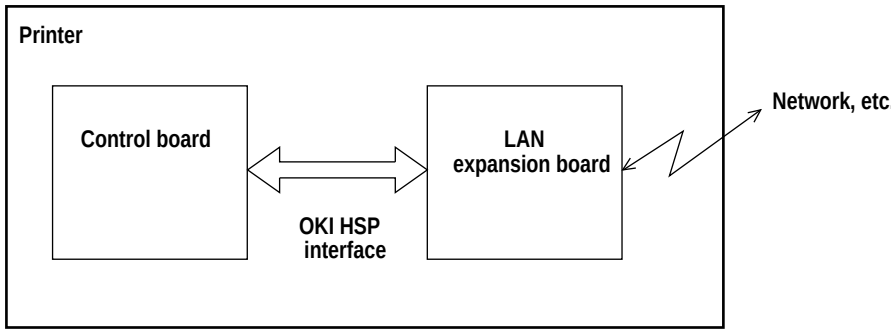
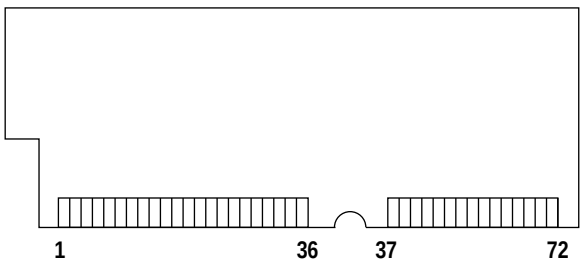


Fig. 2-2

(For the electrical/physical characteristics of the OKI HSP interface, see the OKI HSP interface technical manual.)

(7) RAM module

- Pin layout



- Basic specification
  - Type: 72 pins SIIM (32 bits buss width)
  - Access time: 60ns, 70ns, 80ns, 100ns
  - Capacity: 1, 2, 4, 8, 16 or 32MB
  - Parity: None

2.2 Power/Sensor Board

The power/sensor board consists of an AC filter circuit, a low voltage power supply circuit, a high voltage power supply circuit, heater drive circuit, and photosensors.

(1) Low voltage power supply circuit

This circuit generates the following voltages.

Output voltage	Use
+5 V	Logic circuit supply voltage
+30 V	Motor and fan drive voltage and source voltage for high-voltage supply
+8 V	RESET Circuit
–8 V	Local Talk Line voltage

(2) High voltage power supply circuit

This circuit generates the following voltages necessary for electro-photographic processing from +30 V according to the control sequence from the control board. When cover open state is detected, +30 V supply is automatically interrupted to stop the supply of all the high-voltage outputs.

Output	Voltage	Use	Remarks
CH	-1.30 KV	Voltage applied to charging roller	
DB	-240 V/+300 V	Voltage applied to developing roller	
SB	-360 V/450 V	Voltage applied to toner supply roller	
TR	+4 KV/-1.3 kV	Voltage applied to transfer roller	Variable
CB	+400 V	Voltage applied to clearimng roller	

(3) Photosensor

The photosensor mounted on this power/sensor board supervises the paper running state during printing.

Figure 2-3 shows the sensor layout diagram.

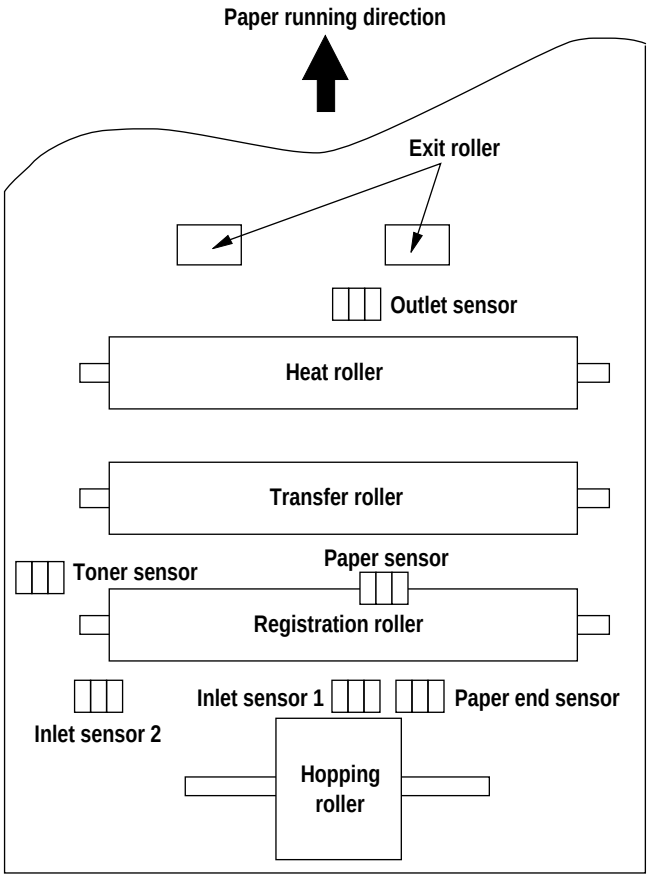


Figure 2-3

Sensor	Function	Sensing state
Inlet sensor 1	Detects the leading part of the paper and gives the supervision timing for switching from hopping operation to feeding operation. Supervises the paper running state and the paper size according to the paper reach time and running time.	ON: Paper exists. OFF: No paper exists.
Inlet sensor 2	Detects the form width.	ON: A4 or larger OFF: Smaller than A4
Paper sensor	Detects the leading part of the paper. Supervises the paper running state.	ON: Paper exists. OFF: No paper exists.
Outlet sensor	Supervises the paper feed and size according to the time of arrival to the sensor and the time of passage of paper.	ON: Paper exists. OFF: No paper exists.
Paper end sensor	Detect the end of the paper.	ON: Paper exists. OFF: No paper exists.
Toner low sensor	Detects the lack of toner.	ON long: Toner low exists OFF short: No Toner low exists

2.3 Relay/Driver Board (AOLC board)

This board relays signals between the Control board and the Power/Sensor board and includes the registration motor and drum motor driver IC.

2.4 Electro-photographic Process

2.4.1 Electro-photographic process mechanism

This mechanism prints image data from the control board on the paper by electro-photographic process.

The Figure 2-4 shows the layout of the electro-photographic process mechanism.

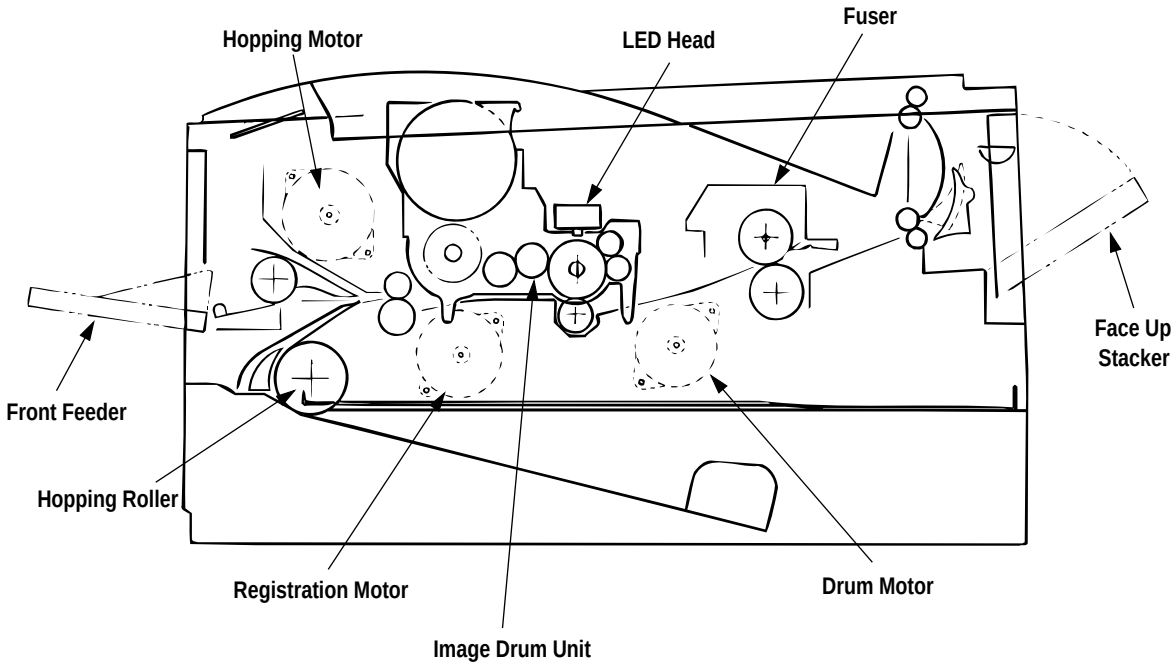


Figure 2-4

(1) Image drum unit

The image drum unit consists of a sensitive drum, a charger, and a developer. The unit forms a toner image on the sensitive drum, using a electrostatic latent image formed by the LED head.

(2) Hopping motor

This motor is a pulse motor of 48 steps/rotation that is two-phase excited by the signal from the control board. It drives the hopping roller of the first tray and the front feed roller via two one-way clutches according to the direction of rotation.

(3) Registration motor

This motor is a pulse motor of 48 steps/rotation that is two-phase excited by the signal from the control board. It drives the registration roller.

(4) Drum motor

This drum motor is a pulse motor of 48 steps/rotation that is two-phase excited by the signal from the control board and is the main motor of this mechanism.

(5) LED head

Image data for each dot line from the control board is received by the shift register and latch register. The 4992 LEDs are driven to radiate the image data to the image drum.

(6) Fuser

The fuser consists of a heater, a heat roller, a thermistor and a thermostat.
An AC voltage from the power supply board is applied to the heater under the control of the HEATON signal from the control board. This AC voltage heats the heater. The control board supervises the heat roller temperature via the thermistor, and regulates the heater roller at a predetermined temperature (185 ~ 188°C) by connecting or disconnecting the AC voltage supply to the heater.
If the heater roller temperature rises abnormally, the thermostat of the heater voltage supply circuit is activated to cut the AC voltage supply forcibly.

2.4.2 Electro-photographic process

The electro-photographic processing is outlined below. Figure 2-5 shows the electro-photographic printing process.

1 Charging

The surface of the image drum is uniformly charged with negative charges by applying a negative voltage to the charge roller.

2 Exposure

Light emitted from the LED head irradiates the negatively charged surface of the image drum. The surface potential of the irradiated part of the image drum surface is lowered, so that an electrostatic latent image associated with the print image is formed.

3 Developing and toner recovery

When the negatively charged toner is brought into contact with the image drum, it is attracted to the electrostatic latent image by static electricity, making the image visible.
At the same time, the residual toner on the image drum is attracted to the developing roller by static electricity.

4 Transfer

When paper is placed over the image drum surface and a positive charge, opposite in polarity to the toner, is applied to the reverse side of the paper from the transfer roller, the toner is attracted by the positive charge and is transferred to the paper. As a result, the toner image formed on the image drum is transferred to the paper.

5 Temporary cleaning

Residual toner that remains on the image drum without being transferred is made uniform by the cleaning roller and is temporarily attracted to the cleaning roller by static electricity.

6 Fusing

The toner image transferred to the paper is fused under heat and pressure.
Figure 2-6 shows an electro-photographc process timing chart.

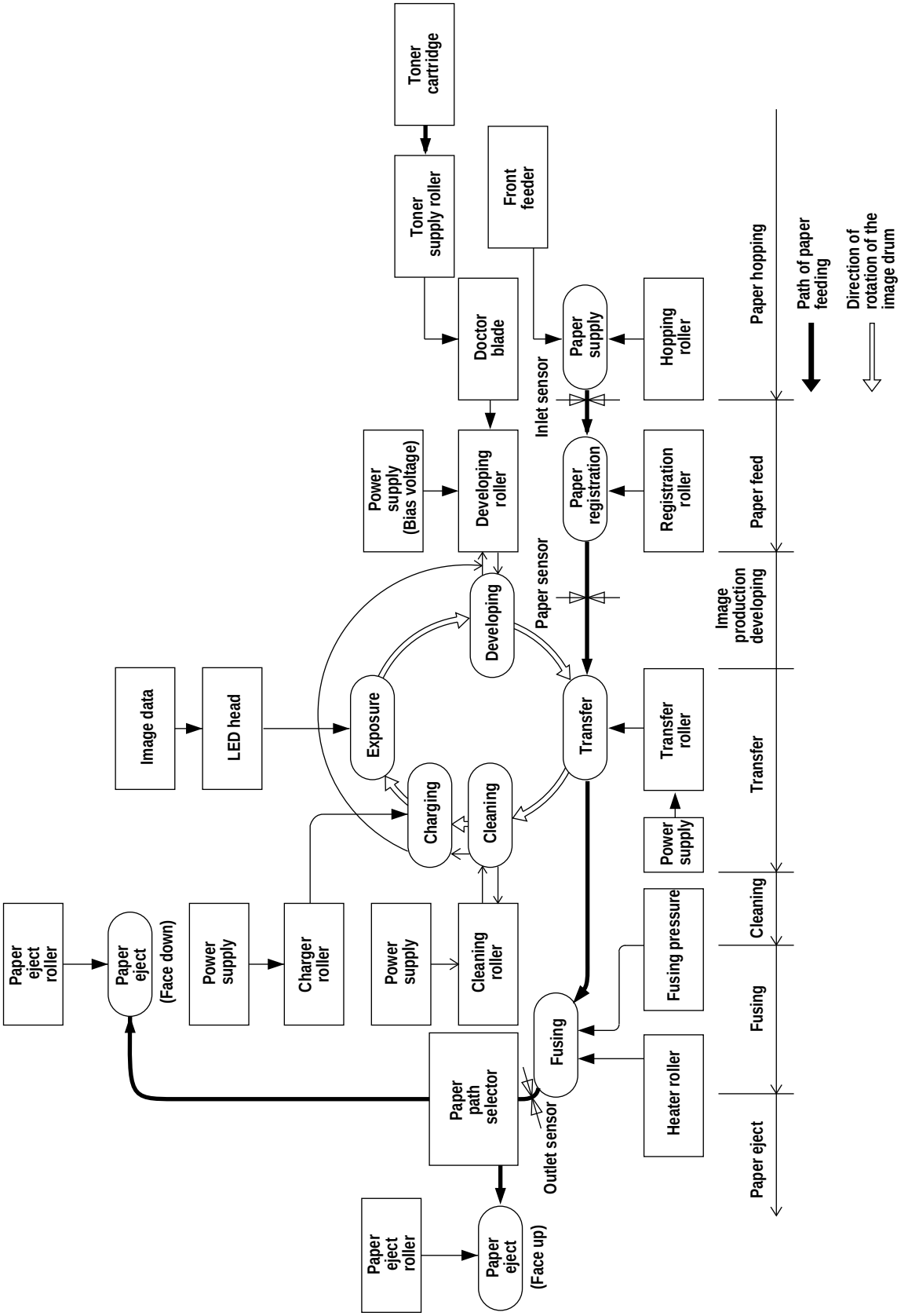

Toner cartridge
Toner supply roller
Front feeder
Doctor blade
Hopping roller
Paper supply
Inlet sensor
Power supply (Bias voltage)
Developing roller
Registration roller
Paper registration
Paper sensor
Image data
LED head
Exposure
Developing
Transfer
Transfer roller
Charging
Cleaning
Power supply
Paper eject roller
Paper eject (Face down)
Power supply
Charger roller
Power supply
Cleaning roller
Fusing pressure
Fusing
Paper path selector
Heater roller
Outlet sensor
Paper eject roller
Paper eject (Face up)
Paper hopping
Paper feed
Image production developing
Transfer
Cleaning
Fusing
Paper eject
Path of paper feeding
Direction of rotation of the image drum

Figure 2-5

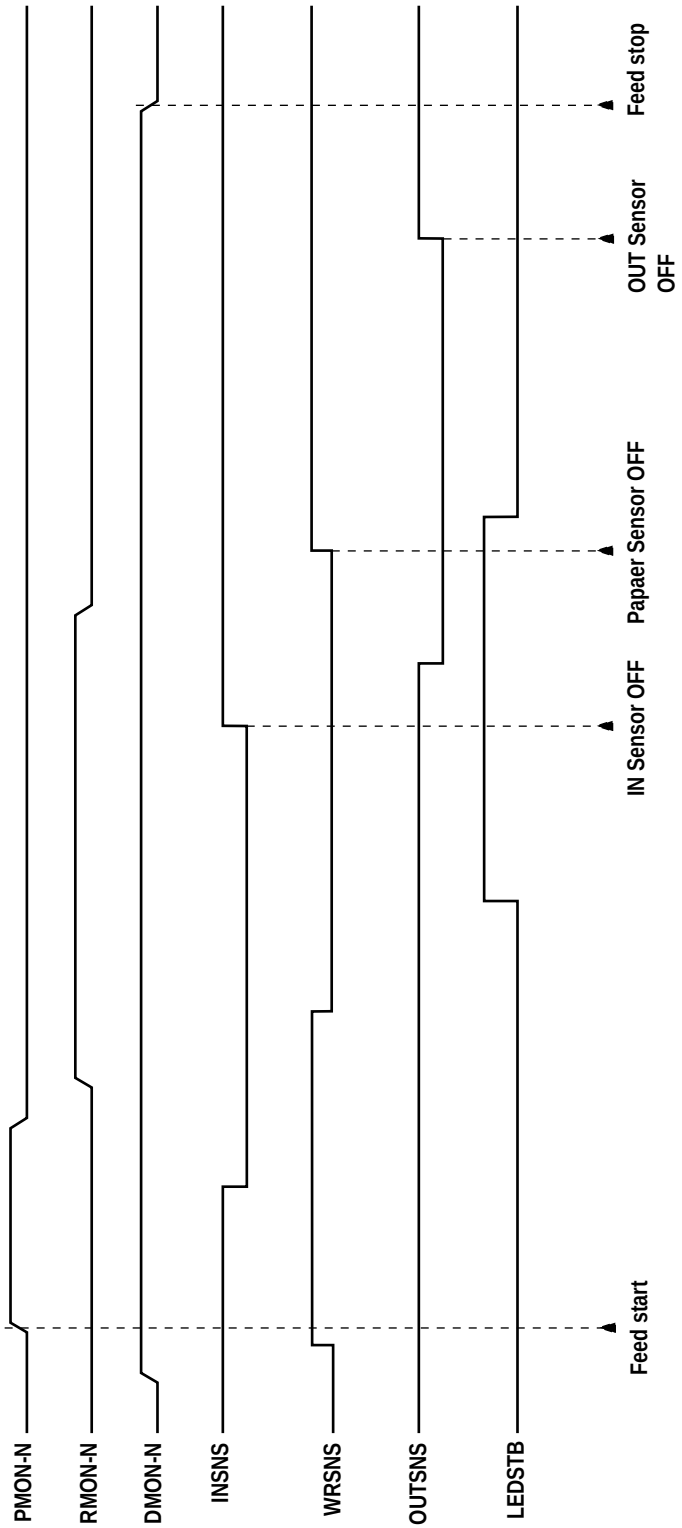
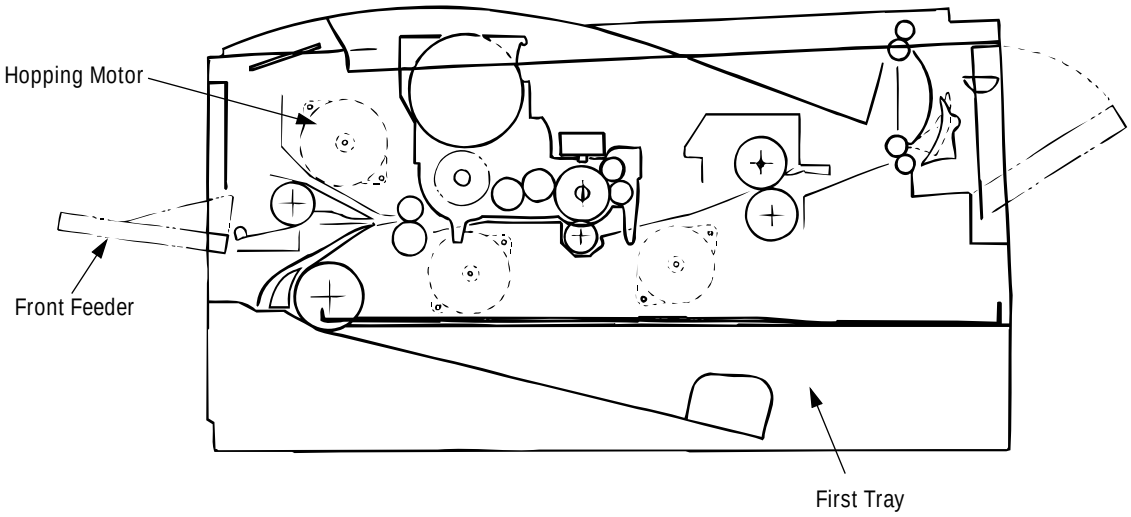

PMON-N
RMON-N
DMON-N
INSNS
WRSNS
OUTSNS
LEDSTB
Feed start
IN Sensor OFF
Papaer Sensor OFF
OUT Sensor OFF
Feed stop

Figure 2-6

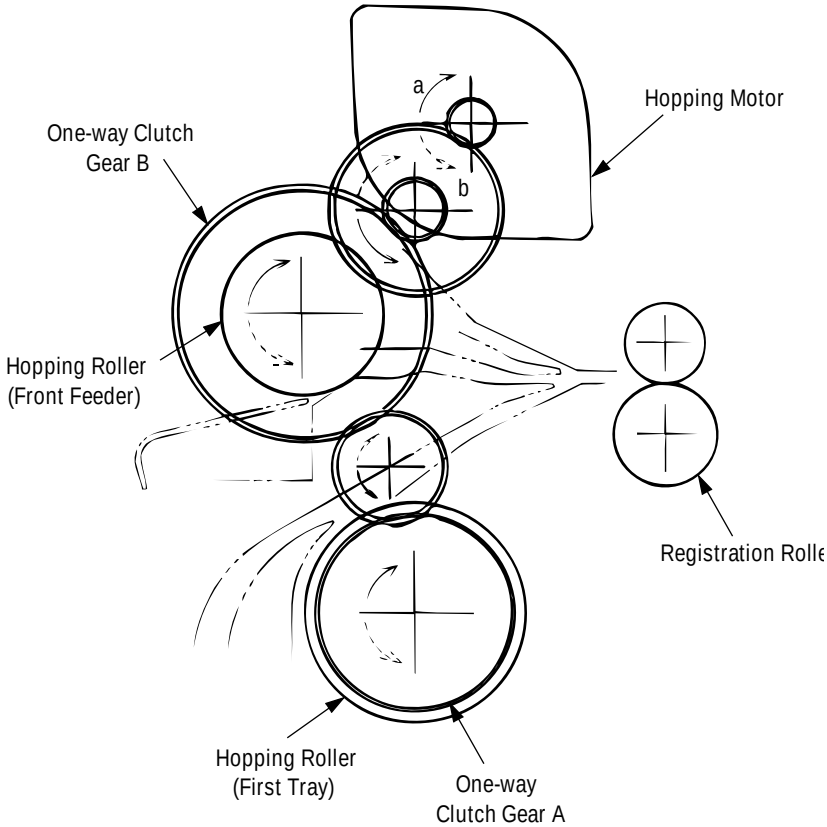
2.4.3 Process operation descriptions

(1) Hopping

Hoppings from the first tray and the front feeder are effected by a single hopping motor in the mechanism shown below.



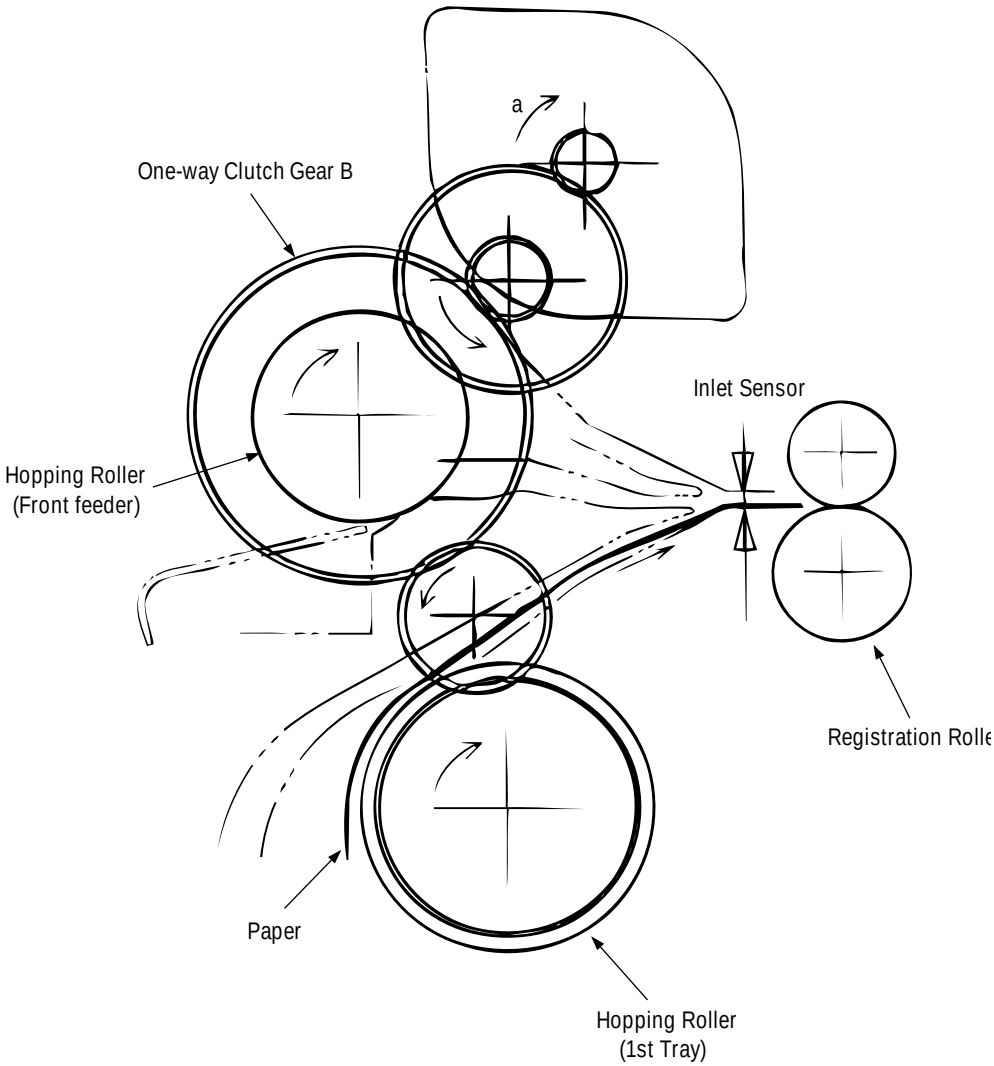
Turning the Hopping motor in the “a” direction drives the hopping roller of the first tray. Turning the Hopping motor in the “b” direction drives the Hopping roller of the front feeder. The both and hopping gears contain one-way bearing, so that turning each of these gears in reverse direction will not be transmitted to the corresponding roller.



(a) Hopping (1st tray)

1 Rotating the pulse motor in the direction a (CW direction) drives the hopping roller of the first tray to advance the paper until the inlet sensor turns on. At the same time, the one-way clutch gear B also rotates. However, the hopping roller of the front feeder will not rotate due to the one-way bearing.

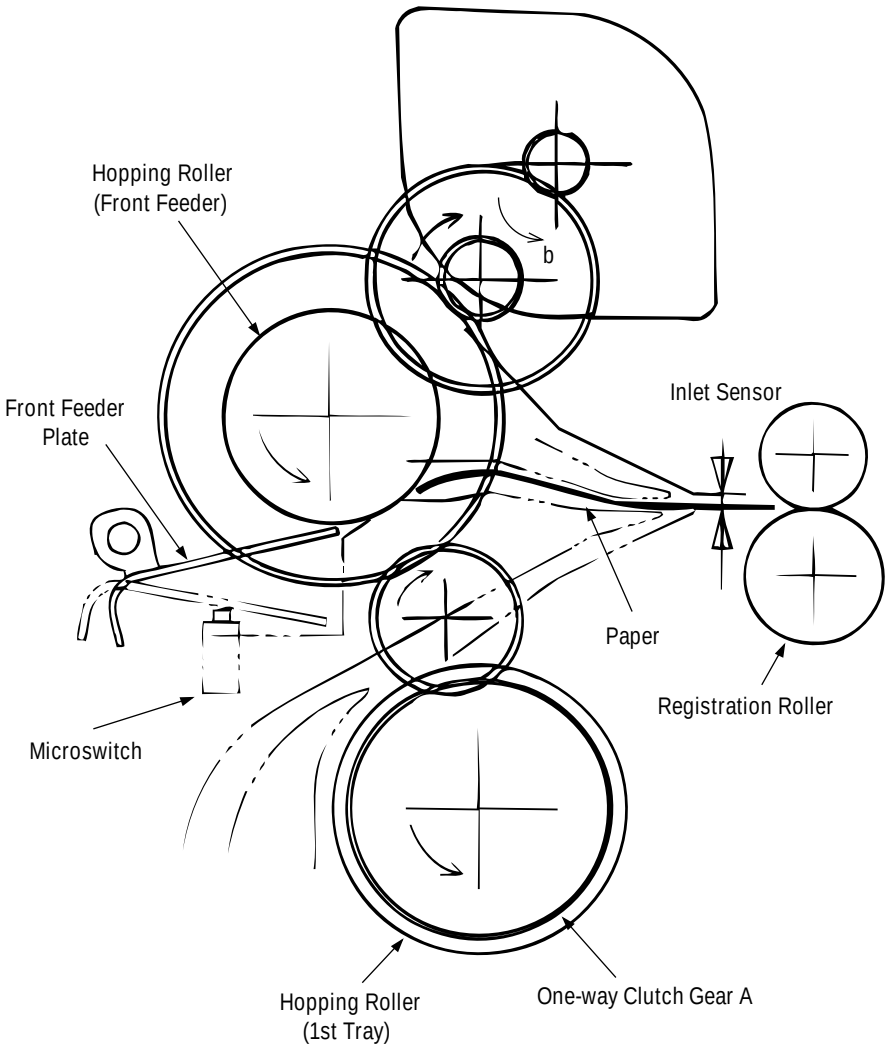
2 After turning on the inlet sensor, the paper advances further by a predetermined length until it hits the registration roller. (The skew of the paper can thus be corrected.)



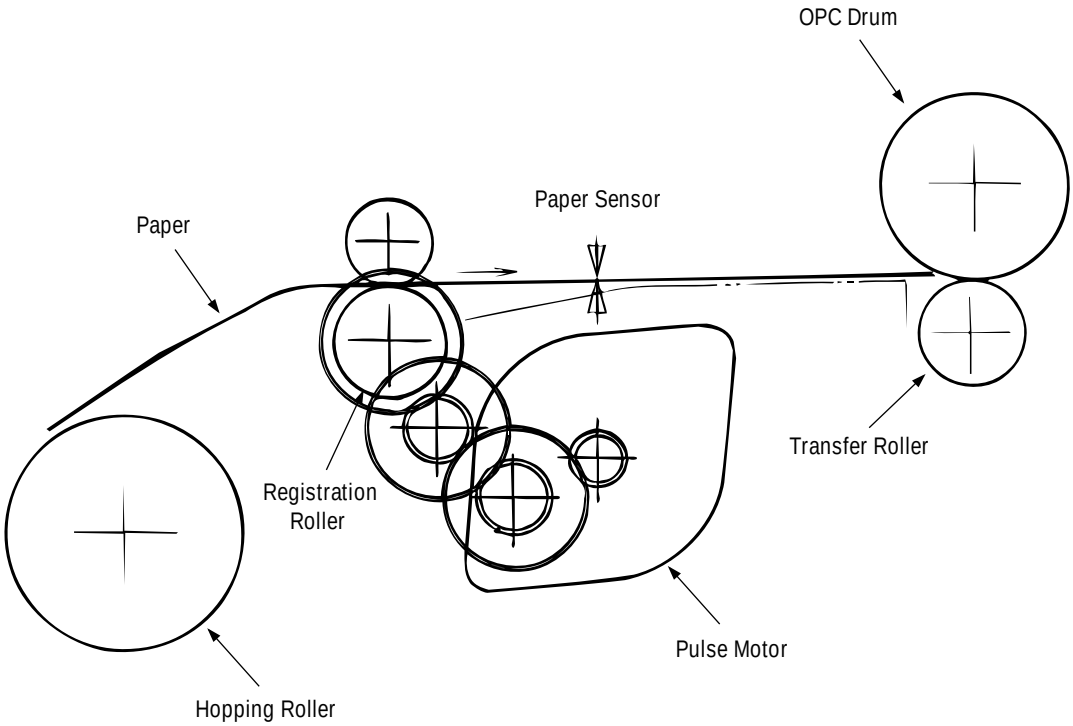
(b) Hopping (front feeder)

1 Rotating the pulse motor in the direction b (CCW direction) drives the hopping roller of the front feeder to advance the paper until the inlet sensor turns on. At the same time, the one-way clutch gear A also rotates. However, the hopping roller of the 1st tray will not rotate due to the one-way bearing.

A cam to push down the front feeder plate is attached on each of the ends of the hopping roller shaft. These cams push down the front feeder plate when the hopping operation is not performed so as to facilitate the setting of paper into the tray. A microswitch is provided under the front feeder plate to detect that the front feeder plate is at the lower position. When the front feeder plate is at the lower position, this microswitch causes the motor to stop.



2 After turning on the inlet sensor, the paper advances further by a predetermined length until it hits the registration roller. (The skew of the paper can thus be corrected.)



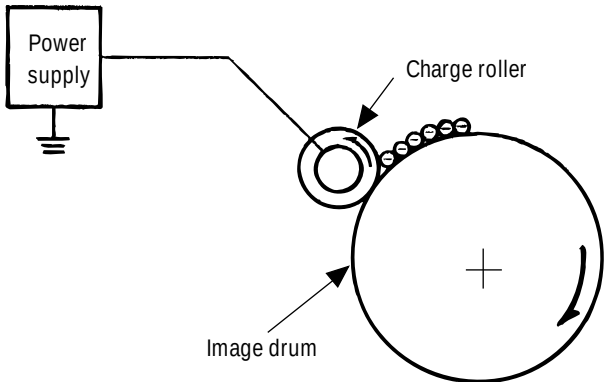
(2) Feeding

After the end of hopping, the pulse motor dedicated for driving the registration roller rotates to drive the registration roller. The driven registration roller advances the paper until it comes out of the registration roller.

When leading edge of the paper causes the paper sensor to turn on, the printing is started synchronously.

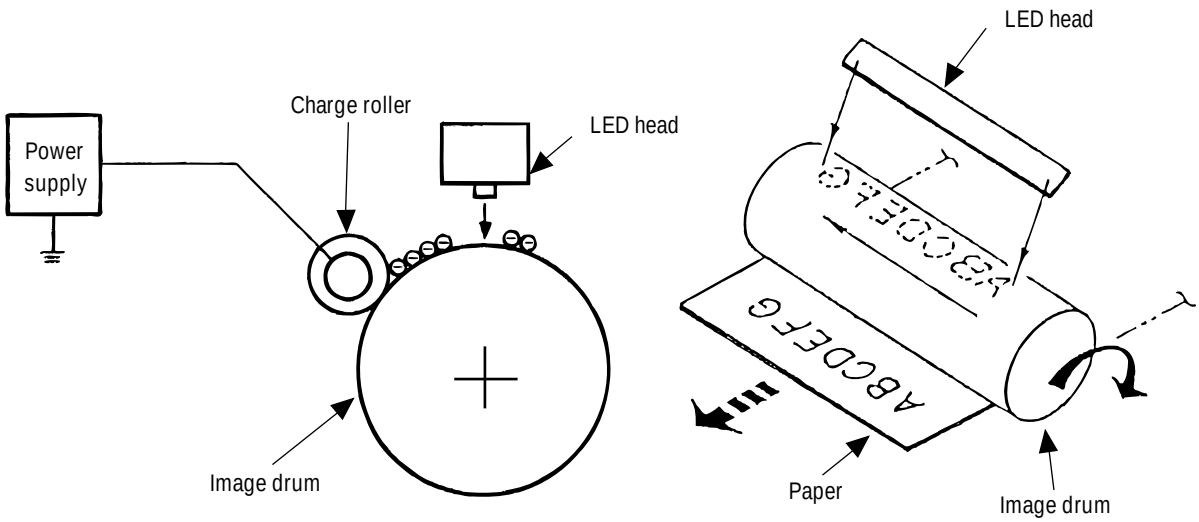
(3) Charging

Charging is effected by applying a DC minus voltage to the charge roller that is in contact with the image drum surface.



(4) Exposure

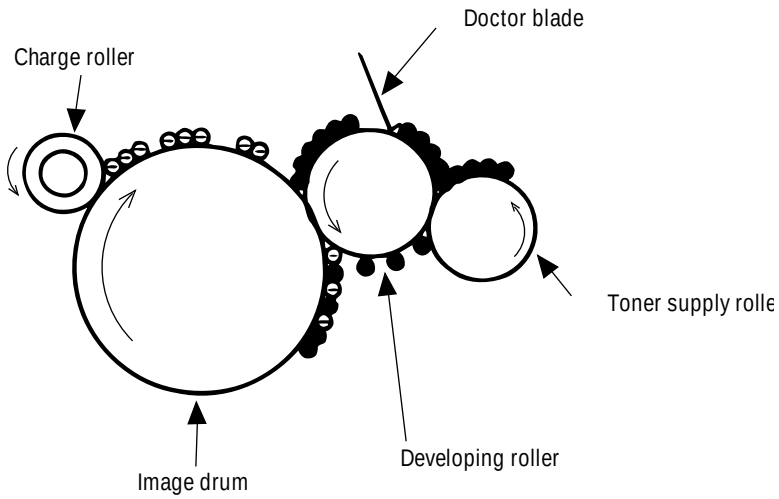
Light emitted from the LED head irradiates the image drum surface with negative charges. The surface potential of the irradiated part of the image drum drops, thereby forming an electrostatic latent image associated with the image signal.



(5) Developing

Toner is attracted to the electrostatic latent image on the image drum surface to convert it into a visible toner image. Developing takes place at the contact between the image drum and the developing roller.

1 As the toner supply roller rotates while rubbing on the developing roller, a friction charge is generated between the developing roller and the toner, allowing the toner to be attracted to the developing roller. (The developing roller surface is charged positive and the toner, negative.)



2 The toner attracted to the developing roller is scraped off by the doctor blade, forming a thin coat of toner on the developing roller surface.

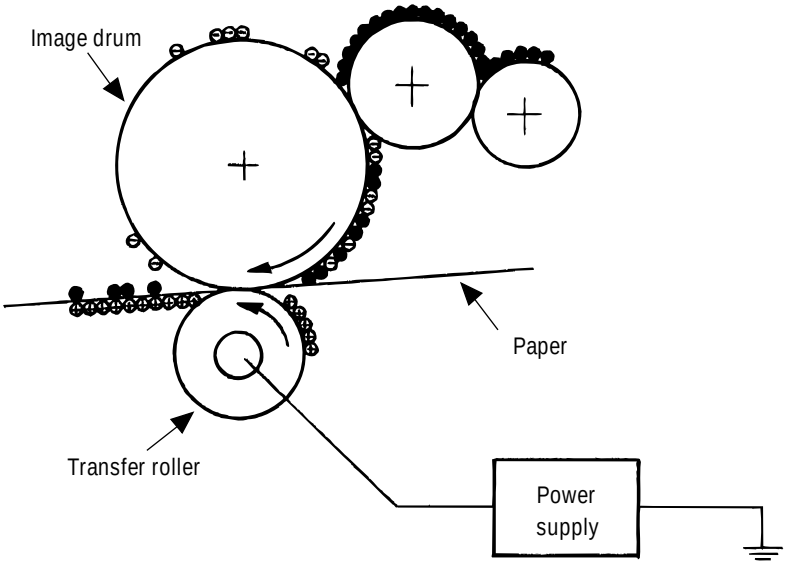
3 Toner is attracted to the exposed part (low-potential part) of the image drum at the contact between the image drum and the developing roller, making the electrostatic latent image visible.

(6) Transfer

The transfer roller is composed of conductive sponge material and is designed to make the image drum surface and the paper closely into contact.

Paper is placed over the image drum surface, and a positive charge, opposite in polarity to the toner, is applied to the paper from its reverse side.

The application of a high positive voltage from the power supply to the transfer roller causes the positive charge induced to the transfer roller surface to be transferred to the paper at the contact between the transfer roller and the paper. As a results, toner charged negative that is attracted to the image drum surface is transferred to the upper side of the paper by the positive charge on the lower side of the paper.

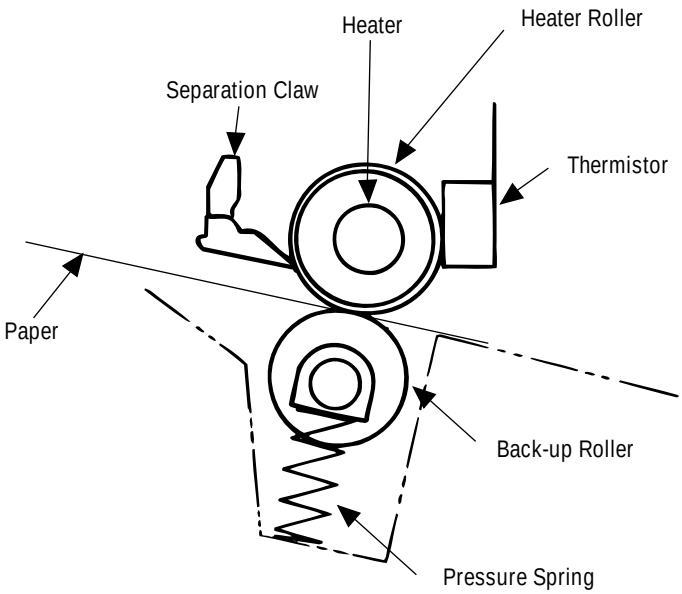


(7) Fusing

After the end of the transfer, the unfused toner image is fused on the paper under heat and pressure as it passes between the heater roller and the back-up roller. The heater roller with a Teflon coating incorporates a 400W heater (Halogen lamp), which heats the heat roller.

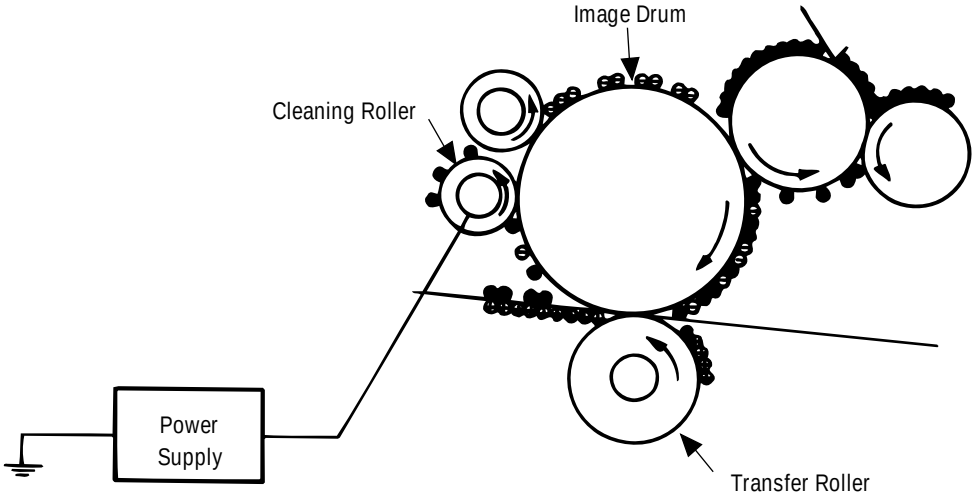
A thermistor which is in contact with the heater roller regulates the heater roller at a predetermined temperature (about 185 ~ 188°C). A safety thermostat cuts off voltage supply to the heater by opening the thermostat in the event of abnormal temperature rises.

The back-up roller is held under a pressure of 2.5 kg from the pressure spring at each side.



(8) Cleaning

After the end of the transfer, residual toner on the image drum is attracted to the cleaning roller temporarily by static electricity to clean the image drum surface.



(9) Cleaning of rollers

The charge roller, transfer roller and cleaning roller are cleaned in the following cases:

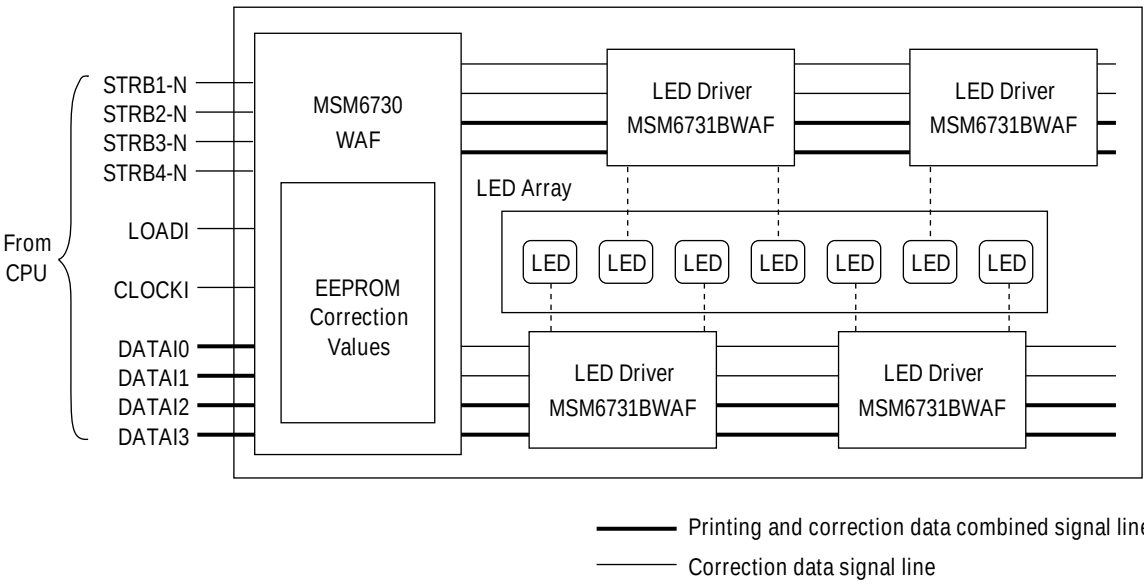
- In warming up at power-on time
- In warming up after the cover is opened and closed
- When the number of accumulated sheets is 10 or more and the printout operation ends

Changes in bias voltage applied to each roller move adhesive toner from the roller to the image drum and return it to the developer.

2.4.4 Revision of LED Head Illumination

An LED correcting head, which is capable of correcting the illumination of the LED for each dot, is being used in this printer. LED illumination correction function of 16 steps is carried out by using an EEPROM which is installed in the LSI that maintains the LED illumination correction values, and an LED correction drivers (MSM6731BWAF) together as a pair.

The LED correcting head consists of the correction control LSI (MSM6730WAF), LED drivers (MSM6731BWAF), and an LED array. The block diagram of the LED correcting head is shown below.

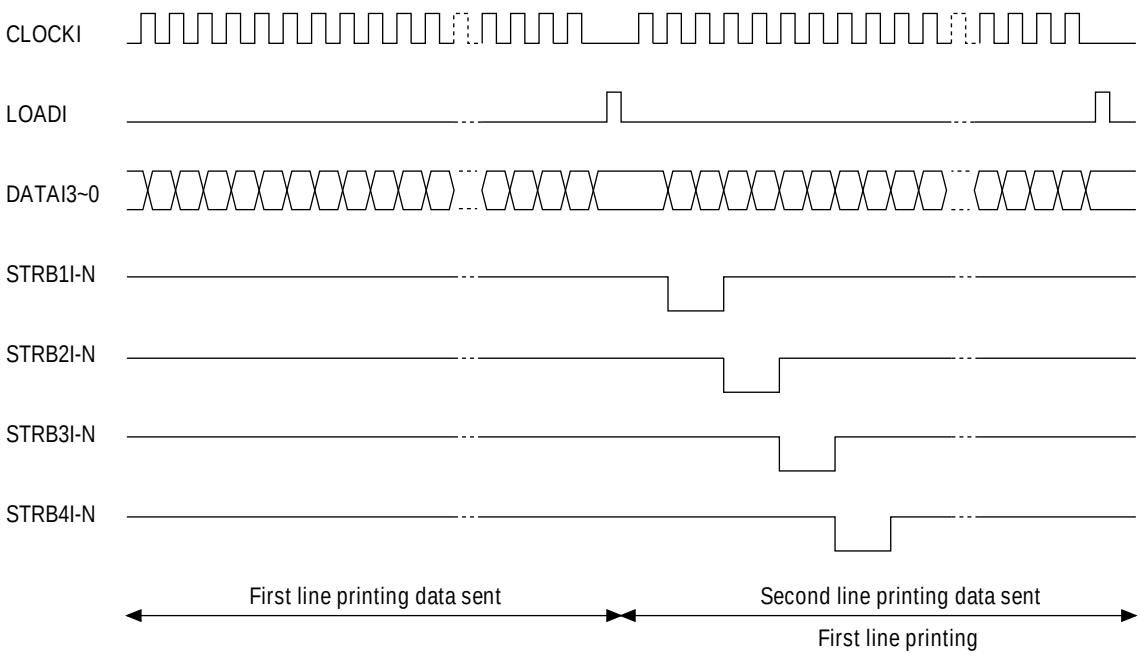


The existing LED head receives the printing data from the CPU directly at its LED drivers. With the LED correcting head, a correction control LSI (MSM6730WAF) is connected between the CPU and LED drivers, so the printing data is input to the LED drivers through the correction control LSI. In order to maintain compatibility with the existing LED head, the printing operation of the LED correcting head is carried out through identical sequence.

The LED correcting head is a 600 dpi head, with the LED drivers located on both sides of the LED array with a 300 dpi pitch spacing. The printing and correction data obtained from the CPU through four signal lines are sent to the LED array.

The printing operation timing chart is shown below.

Normal Mode Printing Timing Chart

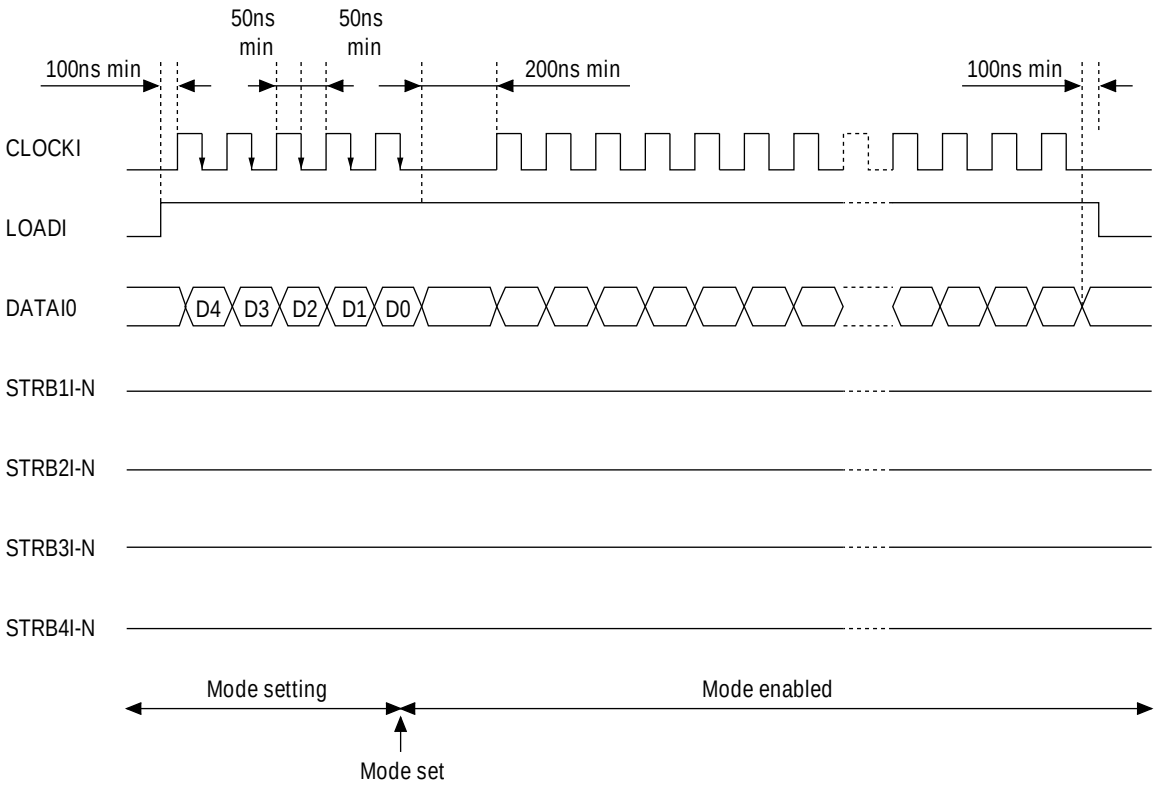


The printing operation is carried out in normal mode. Under ordinary circumstances such as when the power is turned on or when LOADI signal level is low, the normal mode is enabled.

The printing operation is carried out in the following sequence. First, the printing data DATAI3 through DATAI0 are stored, sequentially shifted, in the shift registers of the LED drivers, by the printing data synchronous clock, CLOCKI. Then the printing data stored in shift registers are latched by the high level pulse of LOADI. The latched printing data turns the LEDs on by STRB1I-N through STRB4I-N and actuates printing.

The mode setting timing chart during illumination correction is shown below.

Illumination Correction Mode Setting Timing Chart



The mode setting is carried out in the following manner. LOADI is fixed at high level, and DATAI0 which comes up following this is 4-data latched with the timing of the fall of CLOCKI. The illumination correction mode is selected based on the latched 4-data combination. Then the mode becomes valid at the fifth fall of CLOCKI.

The period during which the illumination correction mode is valid is from the fall of the fifth CLOCKI and while the level of LOADI is high. When the level of LOADI becomes low, the illumination correction mode is terminated, and the head returns to the normal mode, which is mode with which the printing is normally carried out.

The LED driver (MSM6731BWAF) corrects the LED illumination by controlling the LED current. The LED illumination can be set in 16 steps, with 7 steps in the direction of illumination increase in relation to the standard value, and 8 steps in the direction of decrease. For this reason, the LED correction data is a 4-bit data for each dot.

The relationship between the LED correction data and LED current correction steps with the LED driver (MSM6731BWAF) used in an LED head is shown below.

LED Correction Data

Corretion Data				Correction Step	Correction Mode
msb b3	b2	b1	lsb b0		
1	0	0	0	+16%	↑
0	1	1	1	+14%	↑
0	1	1	0	+12%	Correction by
0	1	0	1	+10%	increasing
0	1	0	0	+8%	illumination
0	0	1	1	+6%	↑
0	0	1	0	+4%	↑
0	0	0	1	+2%	↑
0	0	0	0	0%	No correction
1	1	1	1	-2%	↓
1	1	1	0	-4%	↓
1	1	0	1	-6%	Correction by
1	1	0	0	-8%	decreasing
1	0	1	1	-10%	illumination
1	0	1	0	-12%	↓
1	0	0	1	-14%	↓

2.5 Paper Jam Detection

The paper jam detection function supervises the paper state at power-on time and during printing. In the event that the following state occurs, this function interrupts the printing process. If any of the following errors is presented, recovery printing will be performed by removing the jammed paper (namely by opening the upper cover, removing the jammed paper and closing the upper cover).

Error	Cause of error
Paper input jam	• At power-on time, the paper is placed at the inlet sensor. • After hopping operation is attempted three times, the leading part of the paper does not reach the inlet sensor.
Paper feed jam	• At power-on time, the paper is placed at the paper sensor. • The leading part of the paper does not reach the paper sensor within a predetermined distance after the paper has reached the inlet sensor. • The traiding part of the paper does not pass over the paper sensor within a predetermined distance after the leading edge of the paper has passed over the paper sensor. • The leading part of paper does not reach the outlet sensor within a predetermined distance after the paper has reached the paper sensor.
Paper exit jam	• At power-on time, the paper is placed on the outlet sensor. • The paper does not pass over the outlet sensor within a predetermined after the leading part of the paper has reached the outlet sensor. • The paper size check with the manual feed specified considers the reference size as free size.
Paper size error	• The size of the paper is supervised by the inlet sensors 1. It is detected that the paper does not pass over the inlet sensor 1 within predetermined range of distance. • The inlet sensor 2 detects that the size of the loaded paper is A4 or larger, or smaller than A4. The detected paper size differs from the paper size set by command or menu. • The paper size check with the manual feed specified considers the reference size as free size.

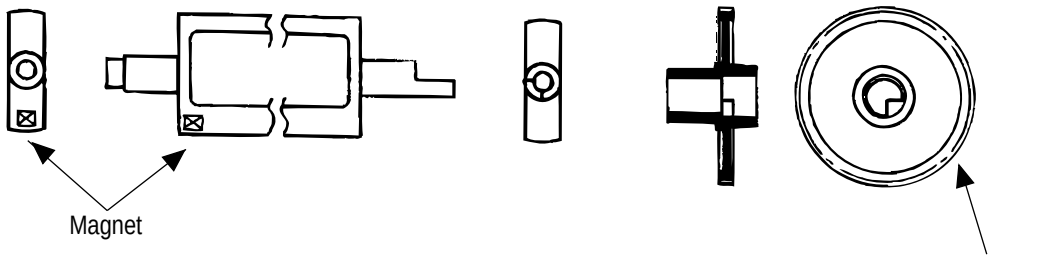
2.6 Cover Open

When the stacker cover is opened, the cover open microswitch on the power/sensor board is turned off to cut the supply of +30V to the high voltage power supply circuit. As a result, all high-voltage outputs are interrupted. At the same time, the CVOPN signal is sent to the control board to notify it of the off state of the microswitch, and the control board performs the cover open processing.

2.7 Toner Low Detection

- Composition

  The device consists of the stirring gear which rotates at a constant rate, the stirring bar and the magnet on the stirring bar. The stirring bar rotates through the link on the protrusion in the stirring gear.



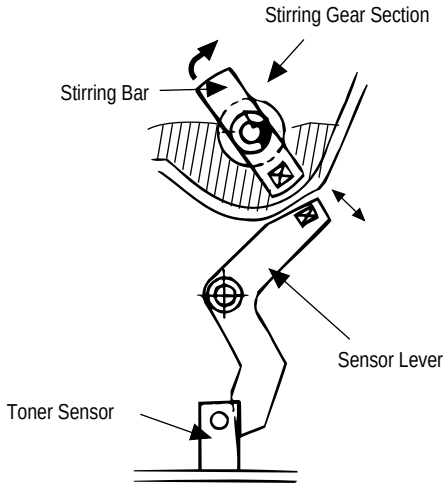
Stirring Bar Stirring Gear

- Operation

  Toner Low is detected by monitoring the time interval of the encounter of the magnet set on the sensor lever and the magnet on the stirring bar.

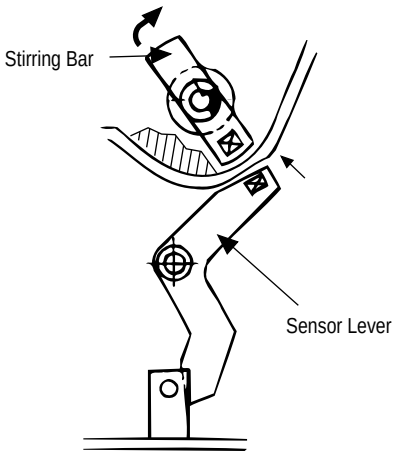
Operation during toner full state

- The stirring bar rotates due to the interlocking with the stirring gear.
- Even when the magnet on the stirring bar reaches the maximum height, since the other side is being dipped in the toner, the stirring bar is pushed by the stirring gear.

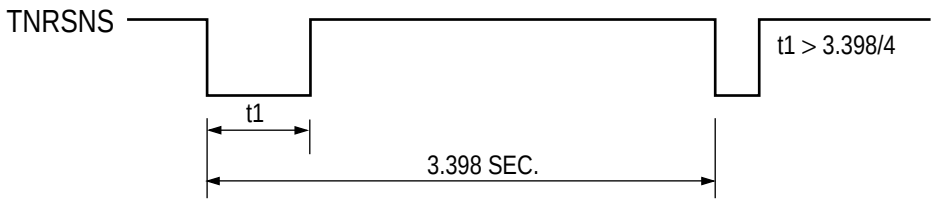


Operation during toner low state

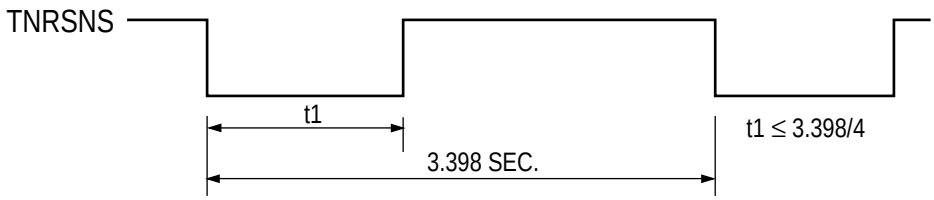
- When the stirring bar reaches the maximum height, since there is no resistance provided by the toner on the other side, it falls to the minimum height due to its own weight. Because of this, the time interval during which it is in encounter with the magnet of the sensor lever becomes long. By monitoring this time interval, toner low can be detected.



TONER FULL state



TONER LOW state



- When the toner low state is detected 2 times consecutively, Toner Low is established.
- When the toner full state is detected 2 times consecutively, Toner Low is cancelled.
- When there is no change with the toner sensor for 2 cycles (3.398 sec. x 2) or more, then the Toner Sensor Alarm is activated.
- The toner sensor is not monitored while the drum motor is in halt.

2.8 Stacker-full Detection

The sensor (interlocked with the lever) at the paper outlet to the stacker detects a stacker-full state (about 250 sheets) and stops printing of the ensuing pages.

2.9 Page Size Detection

The four tab pieces are driven according to the setting position of the paper guide through the cam interlocked with the paper guide of the paper cassette.

When the paper cassette is inserted into the printer, the state of the tab pieces is detected by the microswitch to recognize the paper size.

State of Microswitches				Paper size
SW1	SW2	SW3	SW4	
0	1	1	1	Letter
0	1	0	1	Executive
0	0	1	1	A4
1	1	1	0	Legal 14
1	0	1	1	Legal 13
1	1	0	1	B5
1	1	0	0	A5
1	0	0	1	A6

2.10 PostScript Board (BOARD-PSBA) (Option)

The PostScript board consists of program/font ROM's, an EEPROM, and a LOCALTALK interface control circuit.

(1) Program/font ROM's

The program/font ROM's store the PostScript Level II program and its fonts.
MASK ROM is used as the program/font ROM's.

(2) EEPROM

The EEPROM has a 4-kbit capacity and stores the PostScript's menu settings.

(3) LOCALTALK interface control circuit

Apple Talk protocol data is received from the host system via LOCALTALK interface.
The LOCALTALK interface control circuit consists of a CPU, a program ROM, a SRAM, and a driver/receiver IC.

3. PARTS REPLACEMENT

3. PARTS REPLACEMENT

The section explains the procedures for replacement of parts, assemplies, and units in the field. Only the removal procedures are explained here. Reverse the procedure for the installation.

3.1 Precautions for Parts Replacement

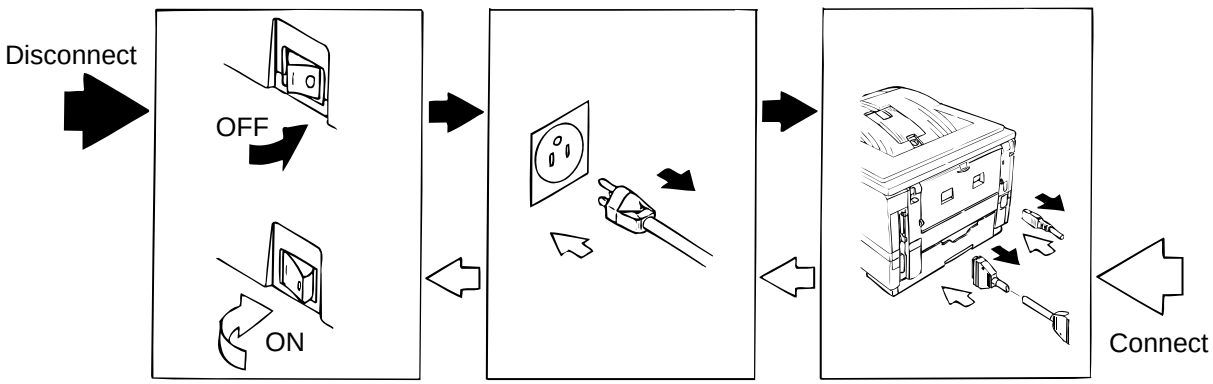
(1) Before starting parts replacement, remove the AC cable and interface cable.

(a) Remove the AC cable in the following procedure:

i) Turn off ("o") the power switch of the printer
ii) Disconnect the AC inlet plug of the AC cable from the AC receptacle.
iii) Disconnect the AC cable and interface cable from the printer.

(b) Reconnect the printer in the following procedure.

i) Connect the AC cable and interface cable to the printer.
ii) Connect the AC inlet plug to the AC receptacle.
iii) Turn on ("I") the power switch of the printer.



(2) Do not try disassembly as long as the printer is operating normally.

(3) Do not remove unnecessary parts: try to keep disassembly to a minimum.

(4) Use specified service tools.

(5) When disassembling, follow the determined sequence. Otherwise, parts may be damaged.

(6) Since screws, collars and other small parts are likely to be lost, they should temporarily be attached to the orginal positions.

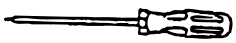
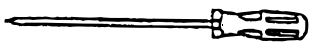
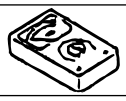
(7) When handling ICs such as microprocessors, ROM and RAM, and circuit boards, do not wear gloves that are likely to generate static electricity.

(8) Do not place printed circuit boards directly on the equipment or floor.

[Service Tools]

Table 3-1 shows the tools required for field replacement of printed circuit boards and units.

Table 3-1 Service Tools

No.	Service Tools		Q' ty	Place of use	Remarks
1		No. 1-100 Philips screwdriver	1	2~2.5 mm screws	
2		No. 2-200 Philips screwdriver, Magnetized	1	3~5 mm screws	
3		No. 3-100 screwdriver	1		
4		No. 5-200 screwdriver	1		
5		Digital multimeter	1		
6		Pliers	1		
7		Handy cleaner	1		
8		LED Head cleaner P/N 4PB4083-2248P1	1	Cleans LED head	
9		Disconnector for Jack-in connector P/N 4PP4076-5395P1	1	Disconnect Jack-in connector	

3.2 Parts Layout

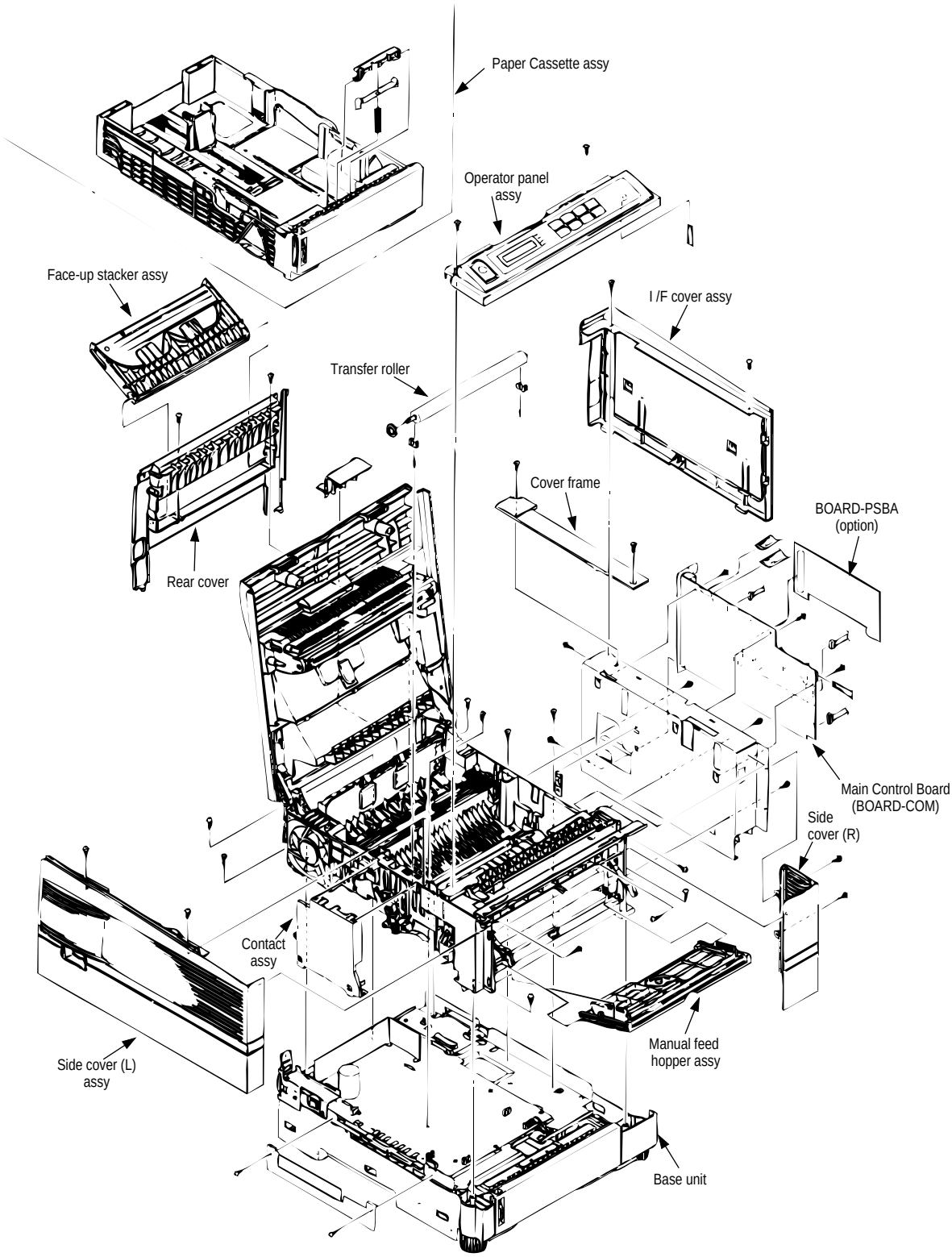


Figure 3-1

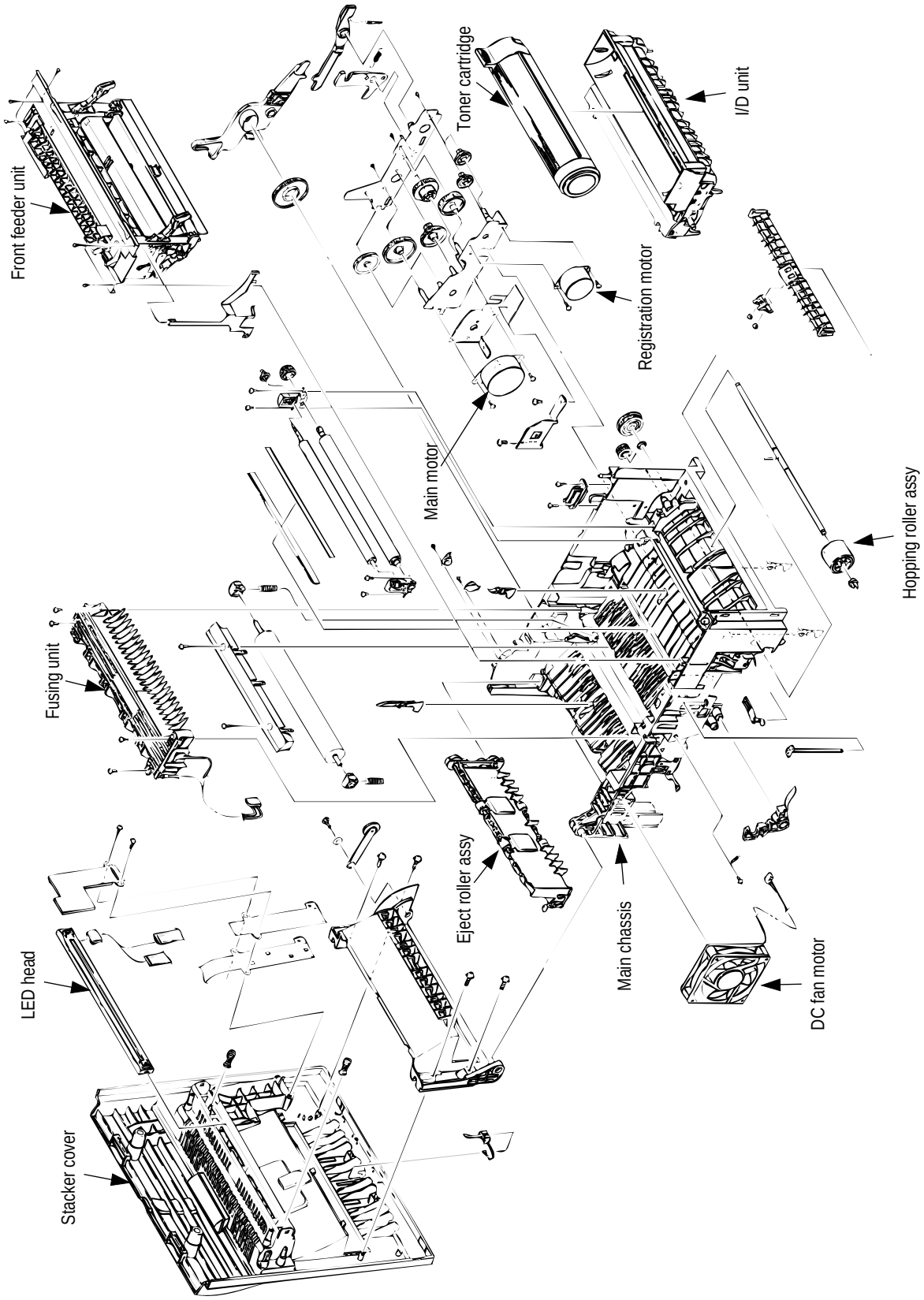

Front feeder unit
Toner cartridge
I/D unit
Registration motor
Main motor
Hopping roller assy
Fusing unit
Eject roller assy
Main chassis
DC fan motor
LED head
Stacker cover

Figure 3-2

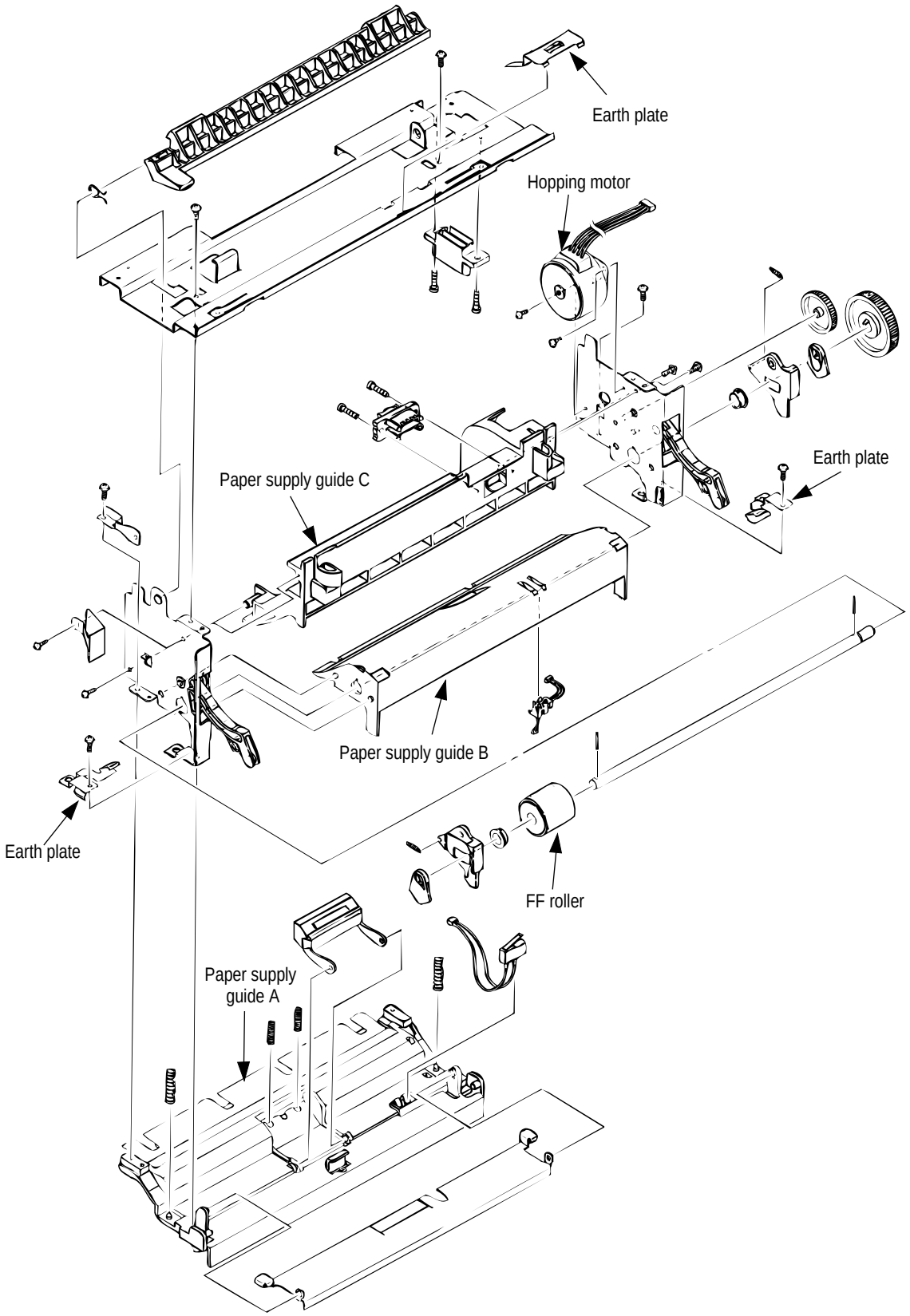

Earth plate
Hopping motor
Earth plate
Paper supply guide C
Paper supply guide B
Earth plate
FF roller
Paper supply
guide A

Figure 3-3

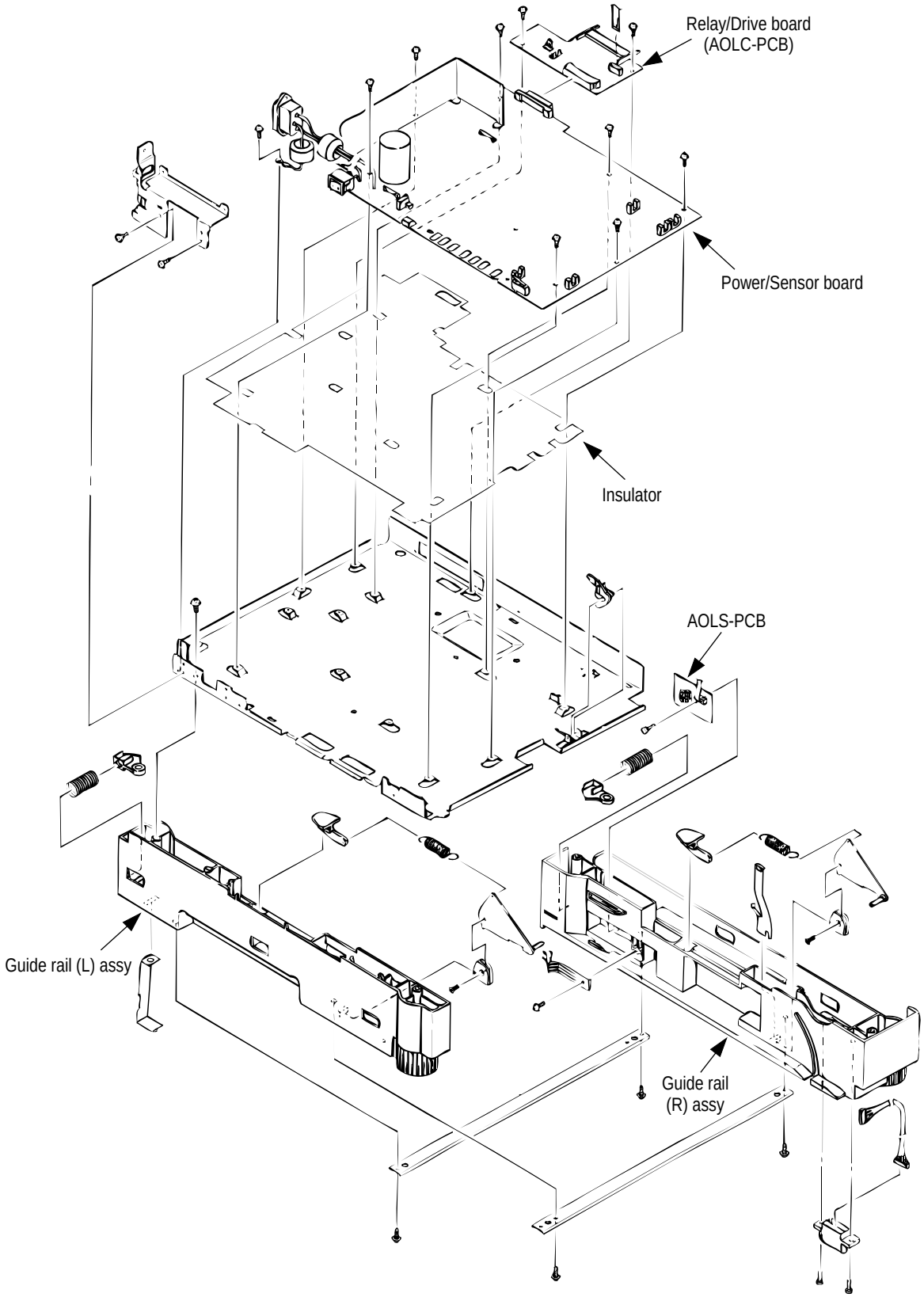
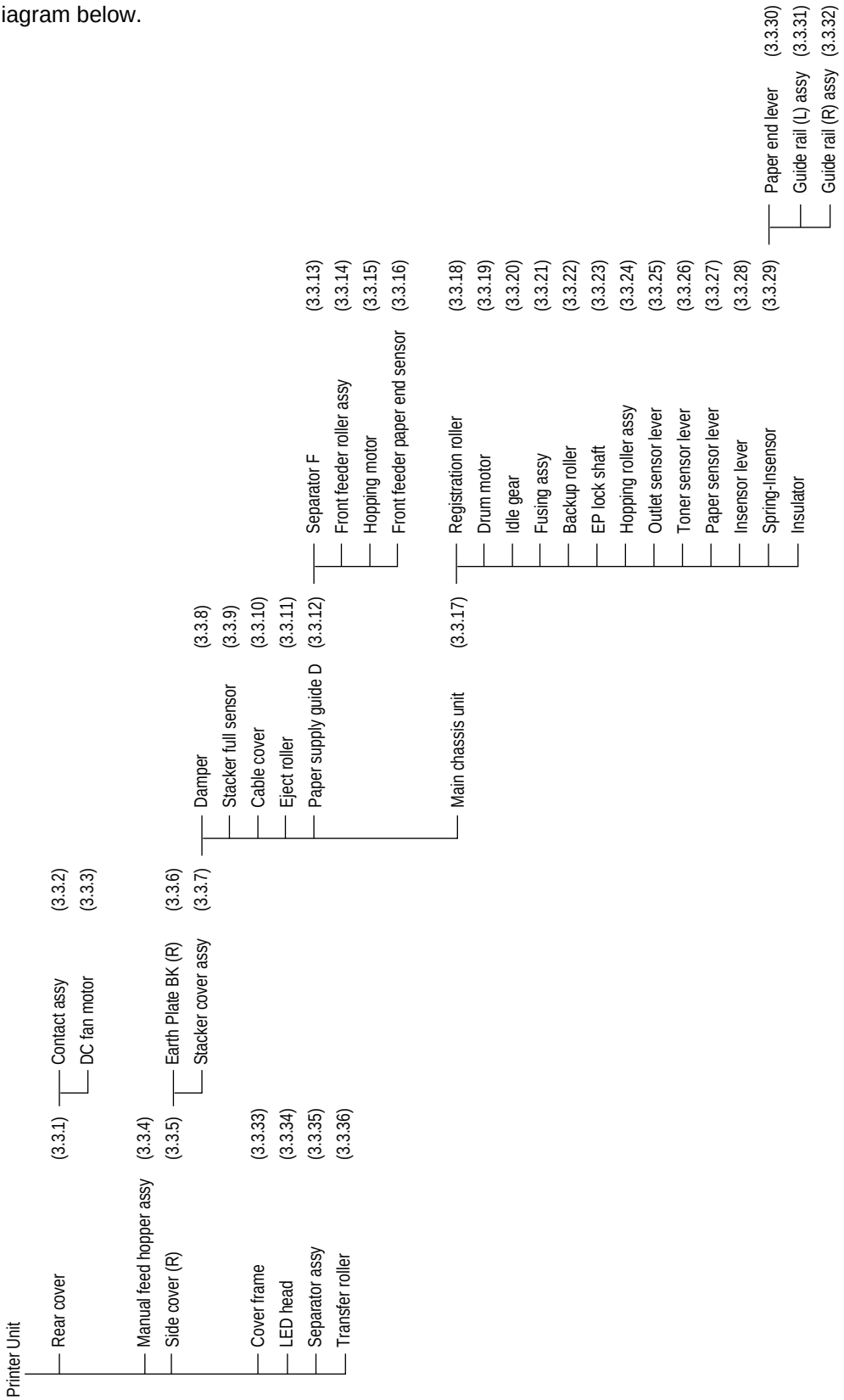

Relay/Drive board
(AOLC-PCB)
Power/Sensor board
Insulator
AOLS-PCB
Guide rail (L) assy
Guide rail
(R) assy

Figure 3-4

3.3 How to Change Parts

This section explains how to change parts and assemblies appearing in the disassembly diagram below.



3.3.1 Rear cover, side cover (L) Assy, face-up stacker Assy, and I/F cover Assy.

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

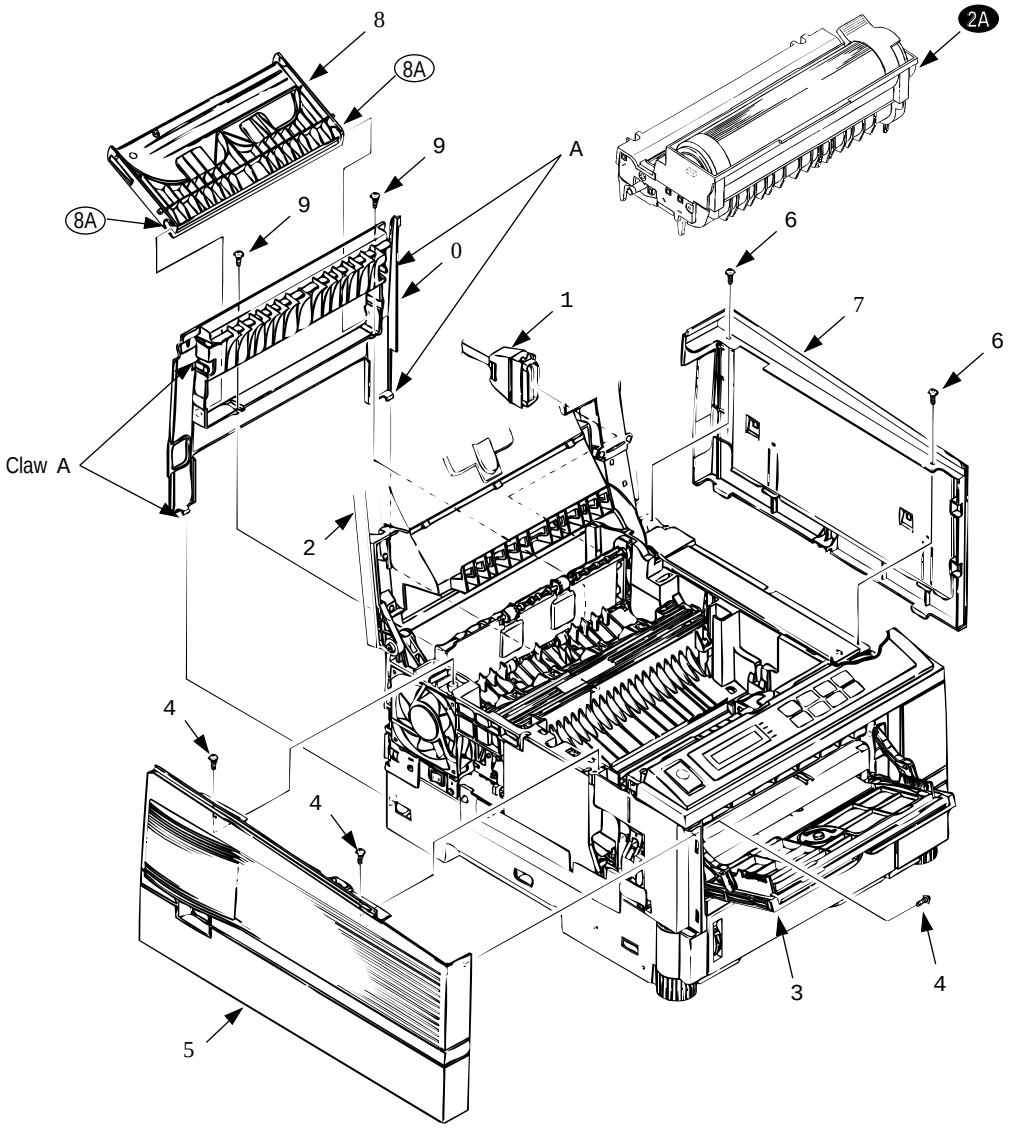
(2) Remove the interface cable 1. Remove drum/toner Assy 2A and store in black plastic bag shipped w/printer.

(3) Open the face-up stacker Assy 8. Disconnect the engagement at the left and right protrusions 8A. Remove the face-up stacker Assy 8. (Flex the Assy 8 in the middle to disengage 8A from the Rear cover 0.)

(4) Open the stacker cover 2 and the manual feed hopper Assy 3. Remove three screws 4. Remove the side cover (L) Assy 5.

(5) Remove two screws 6. Remove the I/F cover Assy 7.

(6) Remove two screws 9 and four claws A. (Use a small flat blade screw driver to "pop" claws.) Remove the rear cover =.



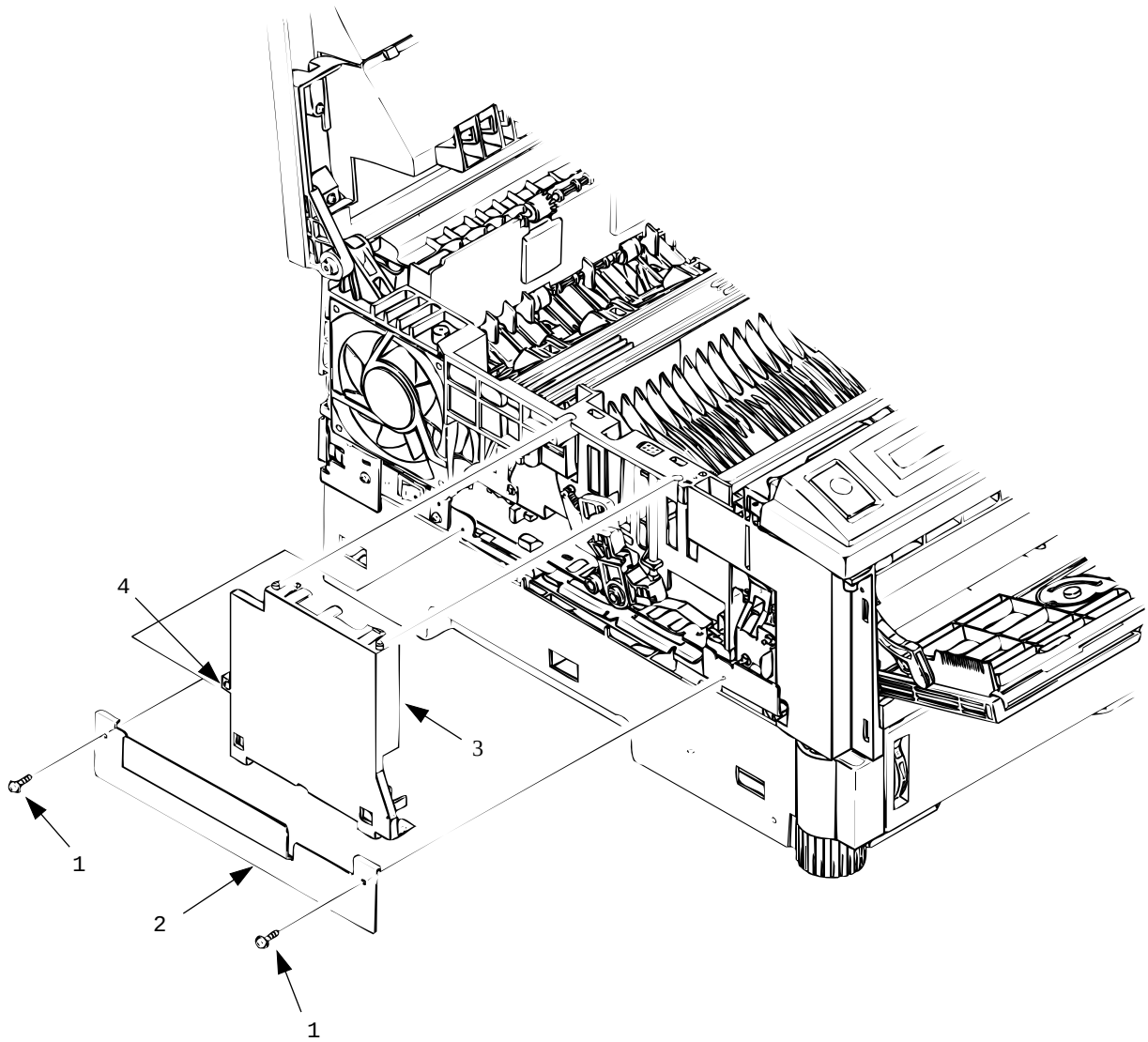
3.3.2 Contact Assy

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the side cover (L) Assy (see 3.3.1 (1) to (4)).

(3) Remove two screws 1. Remove the contact plate (cover) 2 and the contact Assy 3. Pull bottom of Assy 3 out first, then the top of Assy. Remove fan connector cables from location 4.

Caution: Be careful not to deform the electrodes of the contact Assy when removing the contact Assy.

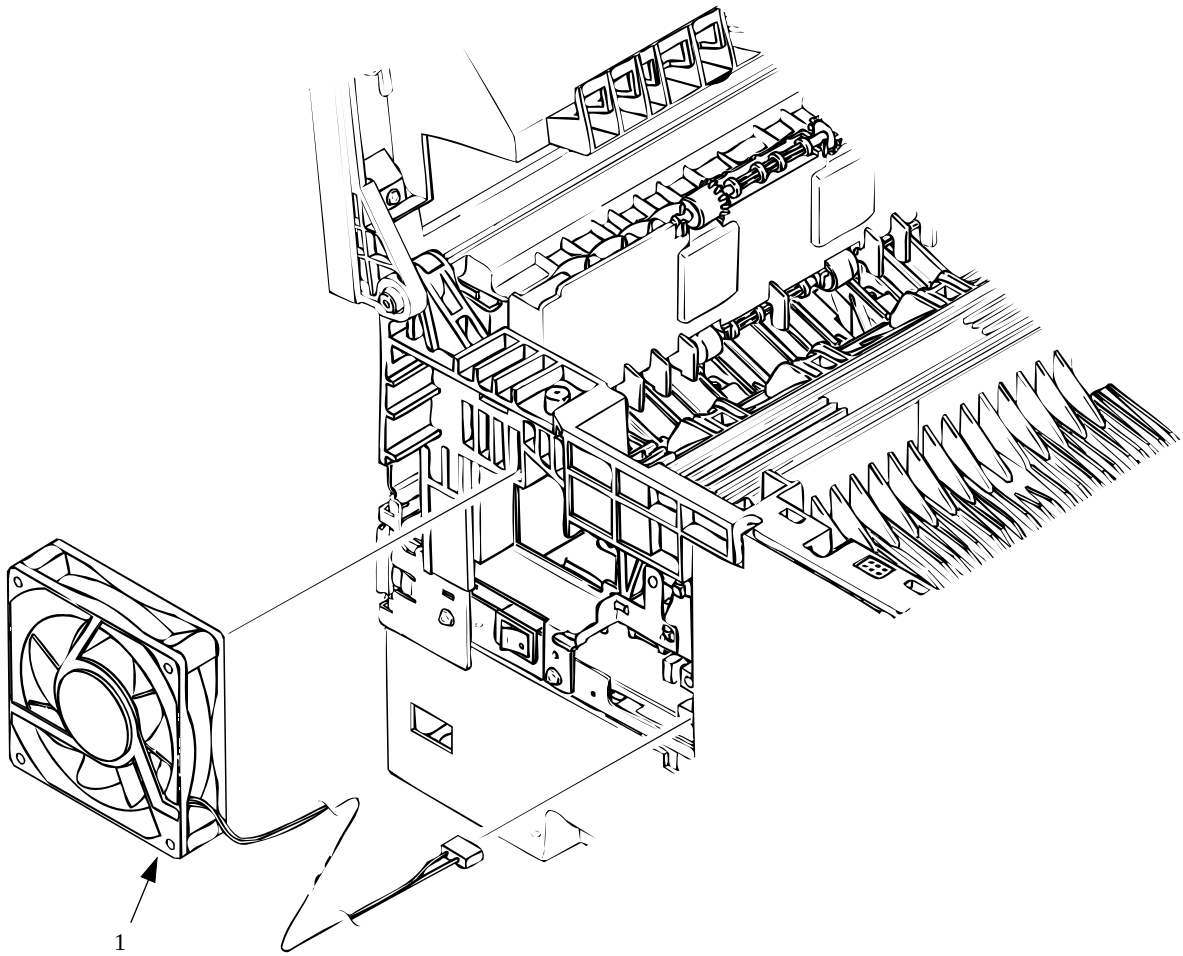


3.3.3 DC fan motor

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the side cover (L) Assy (see 3.3.1 (1) to (4)).

(3) Unplug the connector of the DC fan motor 1 and remove the DC fan motor 1.

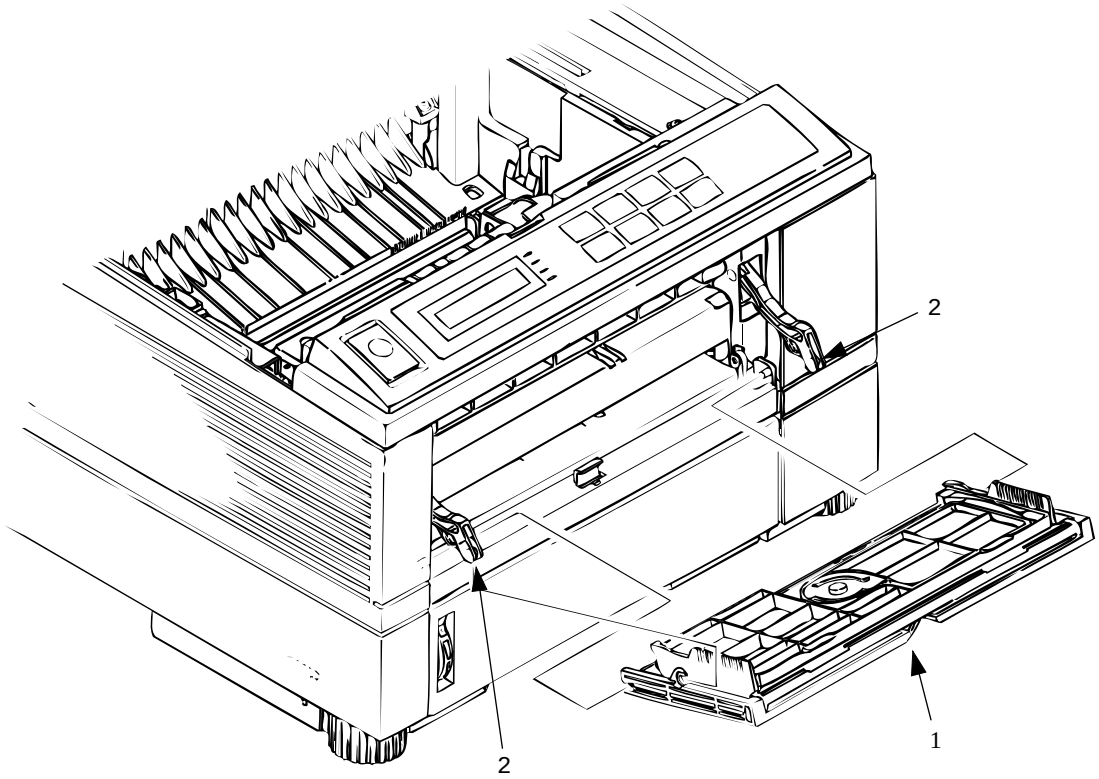


3.3.4 Manual feed hopper Assy

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Open manual feed hopper Assy 1. Disengage the lower portion of this Assy.

(3) Hold manual feed hopper Assy 1 vertically and remove the left and right levers 2 with a downward motion.



3.3.5 Side cover (R) (operator panel Assy)

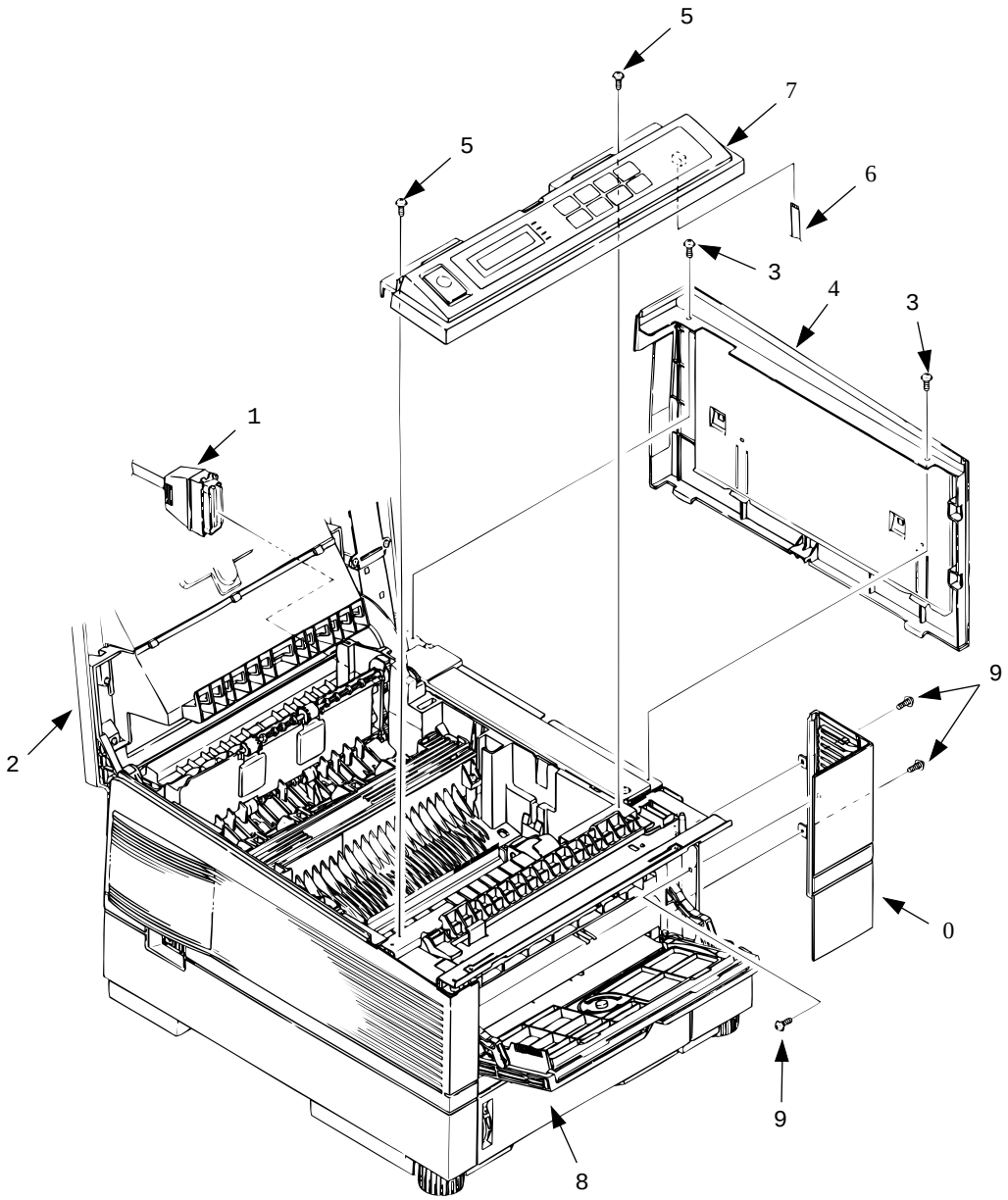
(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove interface cable 1.

(3) Open stacker cover 2. Remove two screws 3. Remove I/F cover Assy 4.

(4) Remove two screws 5 and flexible cable 6 (use care to not damage flexible cable). Remove operator panel Assy 7.

(5) Open manual feed hopper Assy 8. Remove three screws 9 and then remove side cover (R) =.



3.3.6 Earth plate BK (R) (BOARD-PSBA, BOARD-COM)

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove side cover (R) (see 3.3.5).

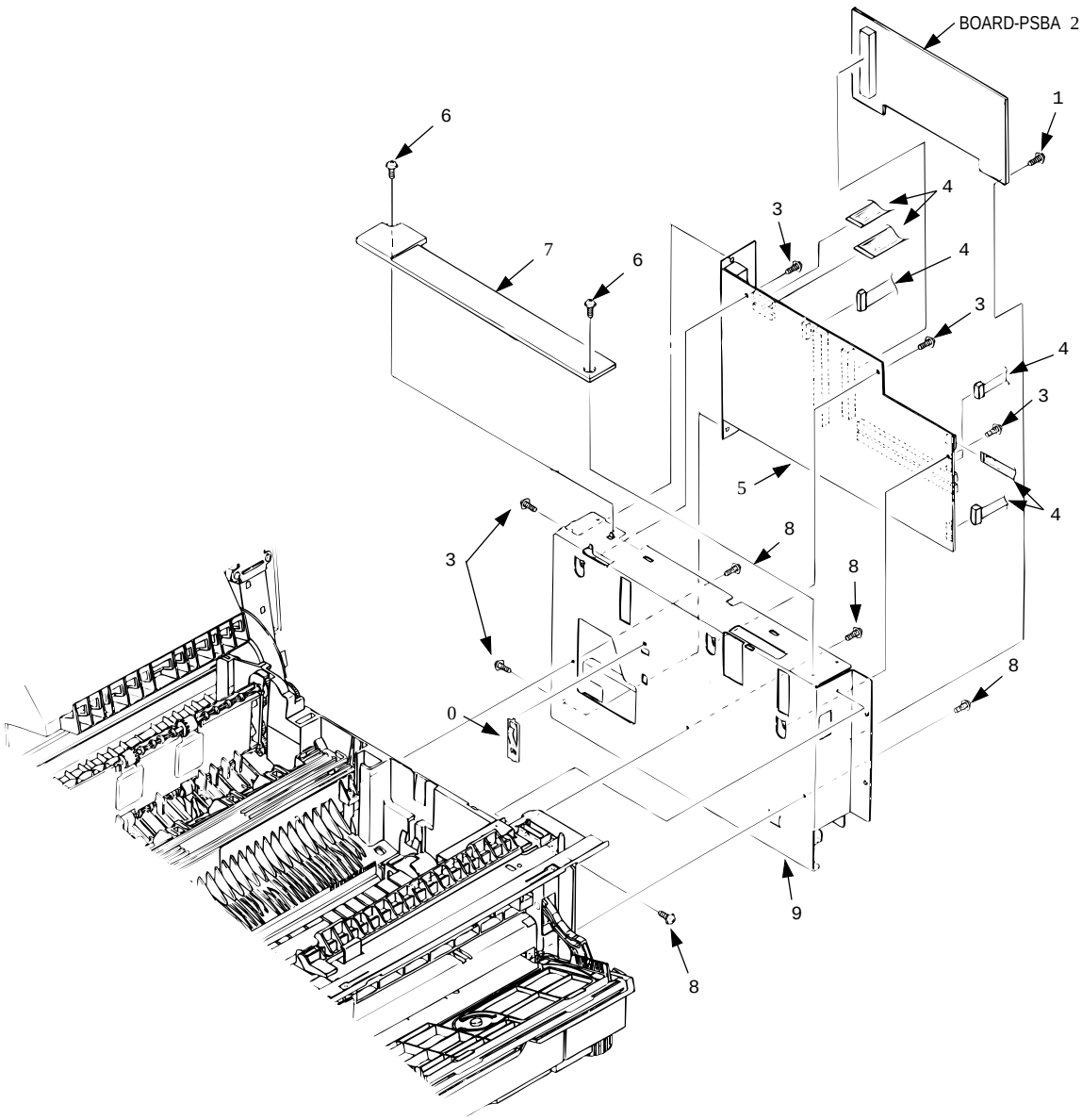
(3) When PSBA-PCB is mounted, remove a screw 1. Remove BOARD-PSBA 2.

(4) Remove five screws 3 and seven connectors 4. Remove BOARD-COM 5.

(5) Remove two screws 6. Remove cover frame 7.

(6) Remove four screws 8. Remove side plate (R) 9, by pulling up and out on top part of plate.

(7) Remove the claws and then remove Earth plate BK (R) 0.



3.3.7 Stacker cover Assy, damper arm, and washer

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

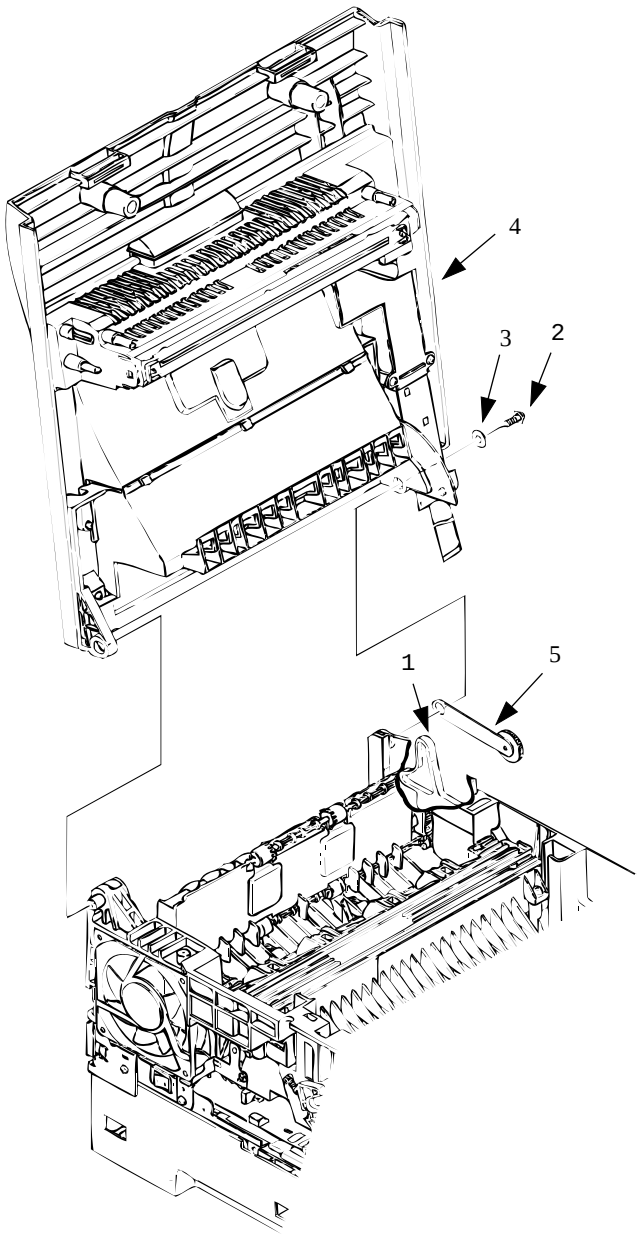
(2) Remove the rear cover (see 3.3.1).

(3) Remove the side cover (R) (see 3.3.5).

(4) Remove the side plate (R) (see 3.3.6 (1) to (6)).

(5) Disconnect the engagement of backup release lever 1 with the protrusion on the light side surface on the right side of the stacker cover.

(6) Remove screw 2 and washer 3. Remove two claws. Remove stacker cover Assy 4 (at this time, the damper arm 5 is also removed).

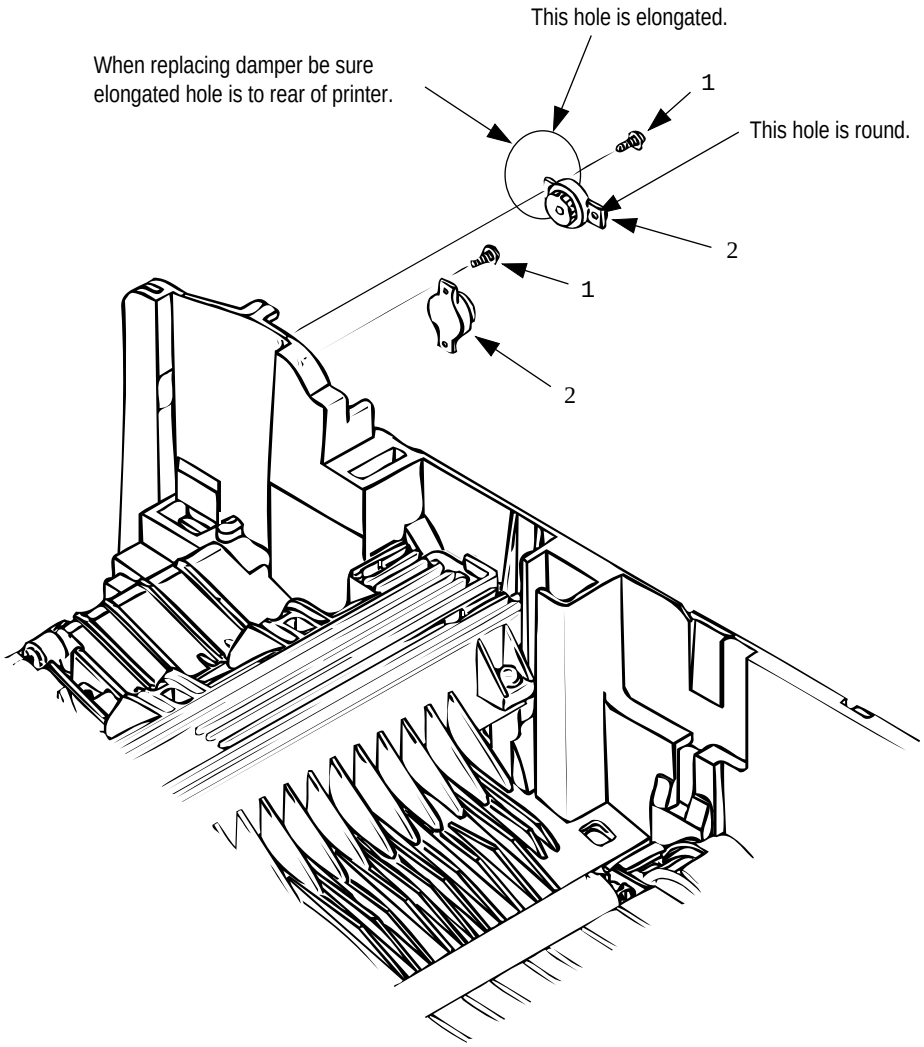


3.3.8 Damper

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the damper arm (see 3.3.7).

(3) Remove two screws 1 and then remove two dampers 2 .



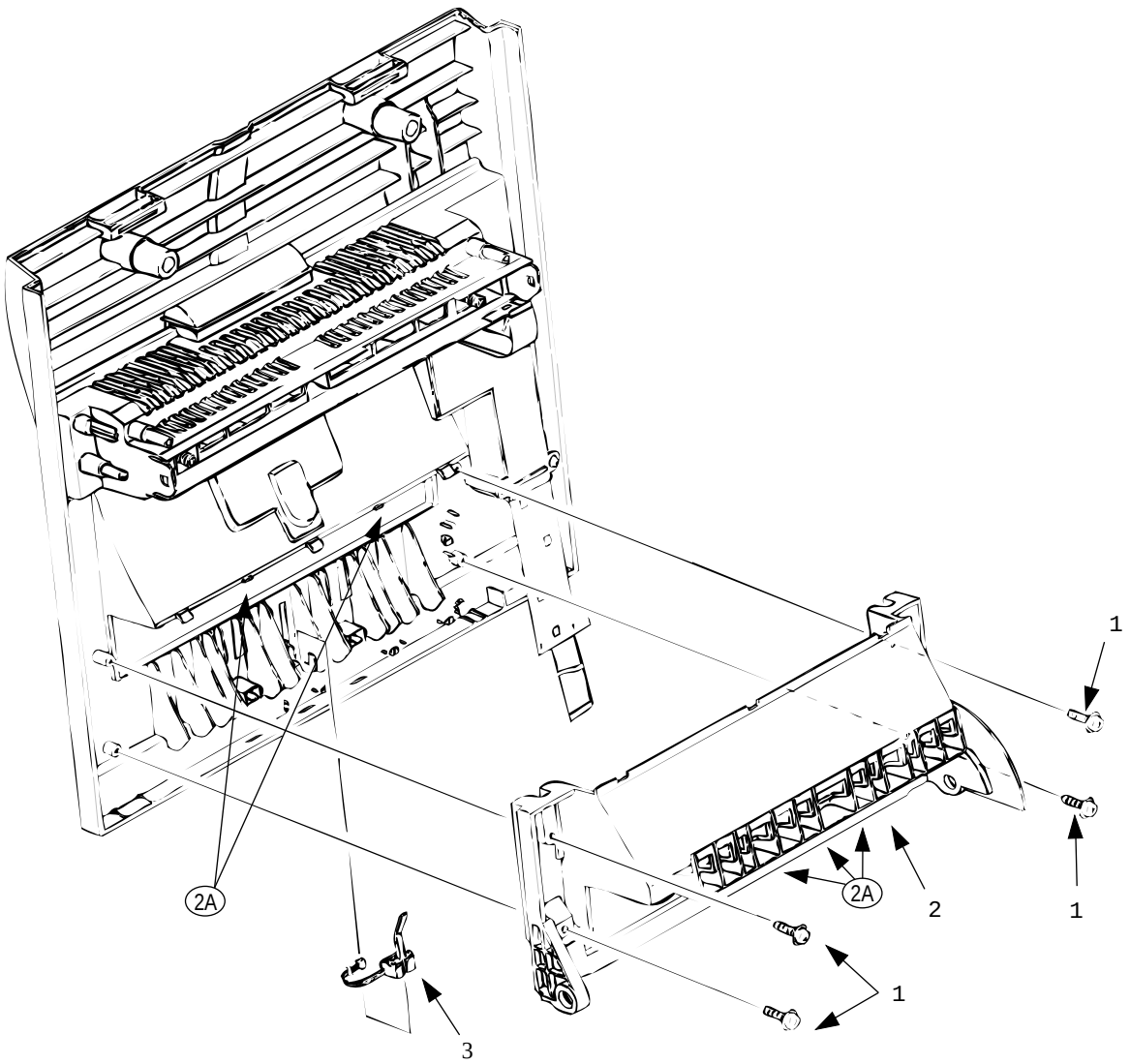
3.3.9 Stacker full sensor Assy

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the stacker cover Assy (see 3.3.7).

(3) Remove four screw 1. Remove stacker mount 2 by releasing the tabs at position (2A).

(4) Remove stacker full sensor Assy 3 by releasing spreading the plastic tabs on each side of sensor Assy 3 and lifting switch from cover.

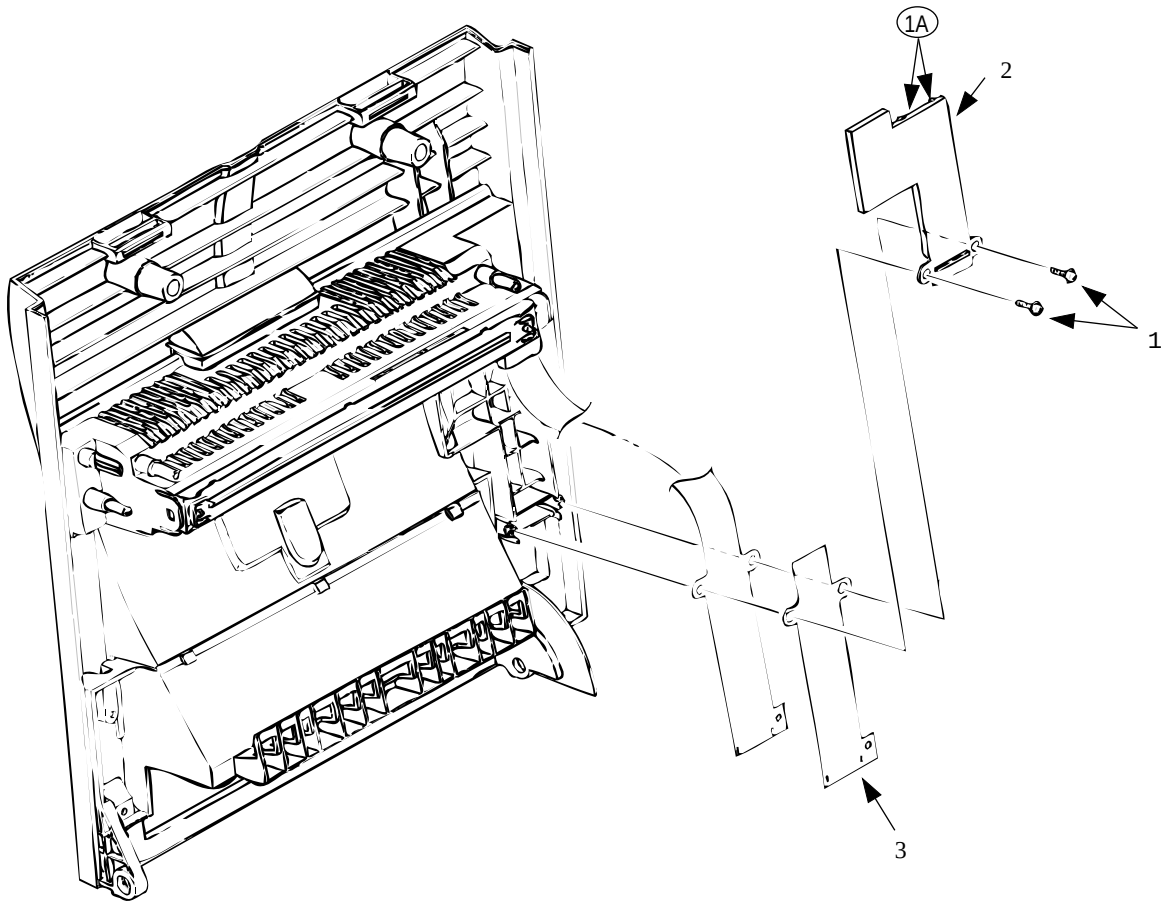


3.3.10 Cable cover (cable guides A and B)

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the stacker cover Assy (see 3.3.7).

(3) Remove two screws 1 release tabs at position (1A). Remove cable cover 2 , cable guide A 3 .



Note: Use care when replacing cable cover. Do not pinch, crimp, or cut cables or protective sheet.

3.3.11 Eject roller Assy

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

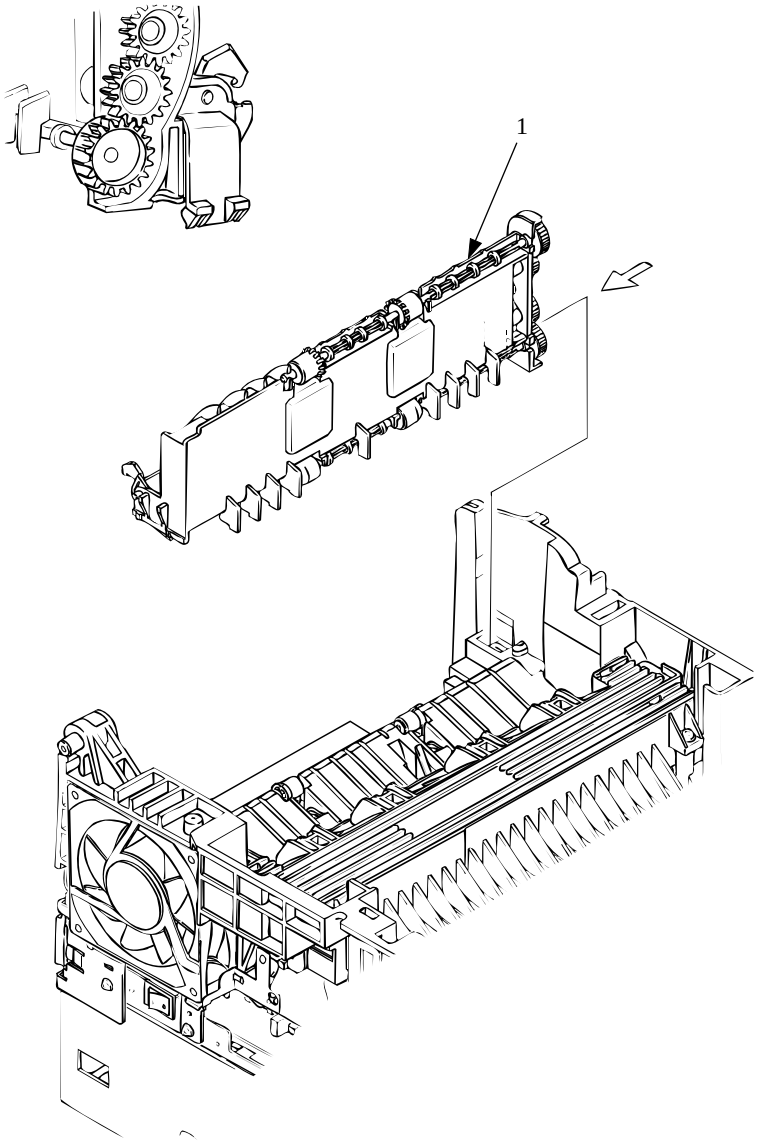
(2) Remove the rear cover (se 3.3.1).

(3) Remove the side cover (R) (see 3.3.5).

(4) Remove the side plate (R) (see 3.3.6 (1) to (6)).

(5) Remove the stacker cover Assy (see 3.3.7).

(6) Release the latch on the right side of eject roller Assy 1. Lift up and remove the eject roller Assy.



3.3.12 Paper supply guide D

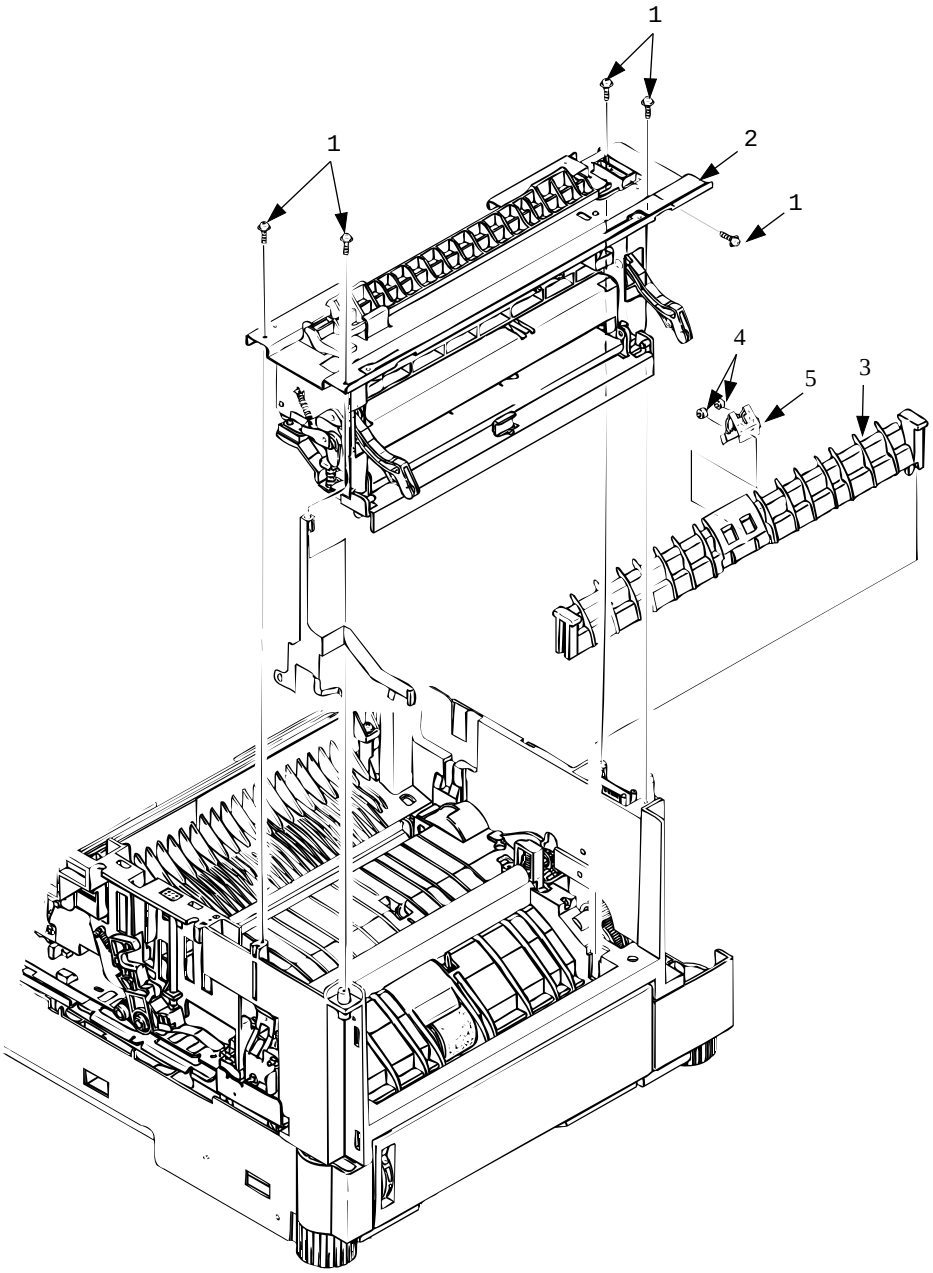
(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the side cover (R) (see 3.3.5).

(3) Remove five screws 1. Lift up and remove front feeder roller Assy 2.

(4) Lift up and remove paper supply guide D 3. (At this time, two bias rollers 4 are also removed. Be careful not to lose them.)

(5) Remove bias spring 5 from the paper supply guide D 3.



3.3.13 Separator F

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the manual feed hopper Assy (see 3.3.4).

(3) Remove the side cover (R) (see 3.3.5).

(4) Remove the front feeder Assy (see 3.3.12 steps (1) to (3)). Make a diagram of wire locations and routing.

(5) Remove two screws 1 and then remove the inner cover 2. At this time, the cover lock lever 3 and the torsion spring 4 are also removed note position of torsion spring.

(6) Remove two screws 5 and then remove square-shaped connector 6.

(7) Using a dedicated tool, remove the connector of switch Assy 7 from square-shaped connector 6.

(8) Turn idle gear 8 in the direction of arrow Ⓐ until front feeder plate 9 is elevated.

(9) Remove front feeder gear = and then remove two springs (F) A. Be careful not to lose the springs.

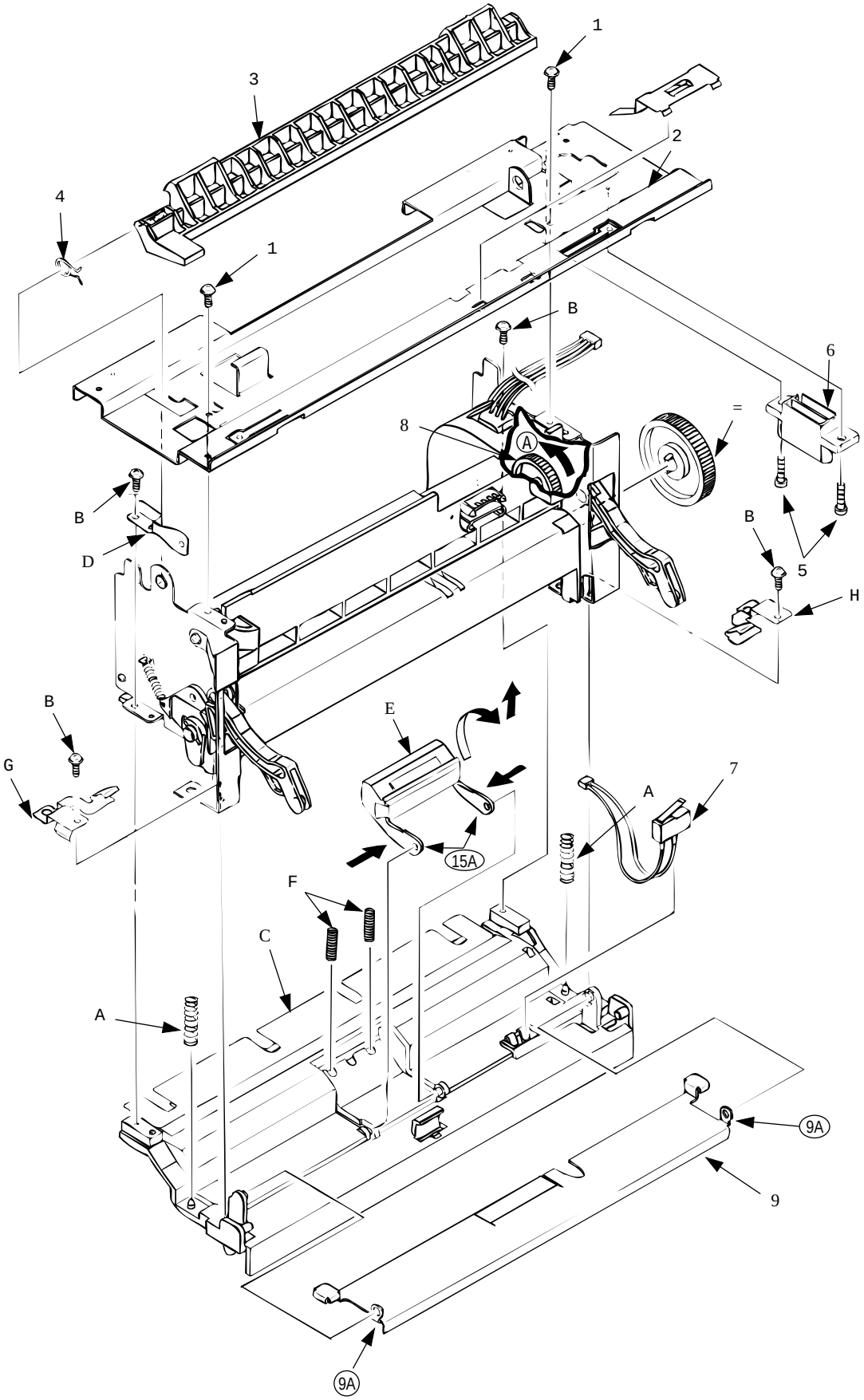
(10) Remove four screws B and then remove paper supply guide A C. (At this time, front feeder earth plate D G H are also removed.)

(11) Remove front feeder plate 9 by releasing the engagement at two parts Ⓐ.
Switch Assy 7 may now be removed.

(12) Pull up separator E toward you and then release two mounting posts at Ⓐ to remove the separator. (At this time, two springs F are also removed simultaneously. Be careful not to lose the springs.)

(13) Release two clutches on paper supply guide A C and pull out switch Assy 7 upward.
Switch Assy 7 should be moved more towards the center of the paper path.

During Re-assembly use great care: do not pinch, crimp, or cut wires to switch Assy 7.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5
H
B
E
G
7
A
15A
F
C
A
9A
9
9A

3.3.14 Front feeder roller Assy

(1) Turn the AC power supply switch off. Unplug the AC power cord from the outlet.

(2) Remove the manual feed hopper Assy (see 3.3.4).

(3) Remove the side cover (R) (see 3.3.5).

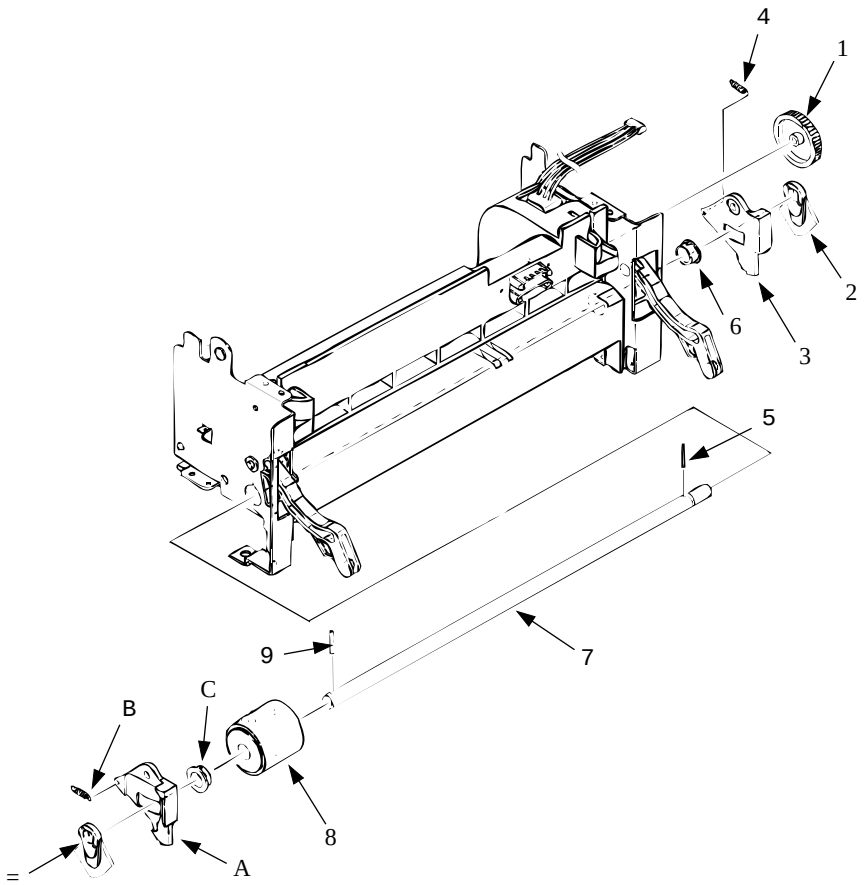
(4) Remove the front feeder roller Assy (see 3.3.12 (1) to (3).

(5) Remove the paper supply guide A (see 3.3.13 (1) to (10)).

(6) Remove idle gear 1 and then remove the right side front feeder cam 2, release lever (R) 3, and spring 4. (At this time, knock pin 5 and bearing F 6 are also removed. Be careful not to lose them.) Do not mix these parts with those from the left side of Assy.

(7) Pull out the front feeder shaft 7 toward the left and then remove front feeder roller Assy 8.

(8) Remove knock pin 9 and then remove front feeder cam = on the left (L) side, release lever (L) A, and spring B. (At this time, the bearing F C on the left (L) side is also removed.) Do not mix these parts with those from the right side of Assy.



Note 1: Hopping roller orientation when removed from shaft.
2: Be sure sensor arm swings freely after re-assembly.
3: Be sure that during re-assembly both feeder cams (2 and =) are facing the same direction.

3.3.15 Hopping motor

(1) Turn the AC power switch off. Unplug the AC power cable from the outlet.

(2) Remove the manual feed hopper Assy (see 3.3.4).

(3) Remove the side cover (R) (see 3.3.5).

(4) Remove the front feeder Assy (see 3.3.12.(1) to (3)).

(5) Remove the inner cover and square-shaped connector (see 3.3.13.(5) and (6)).

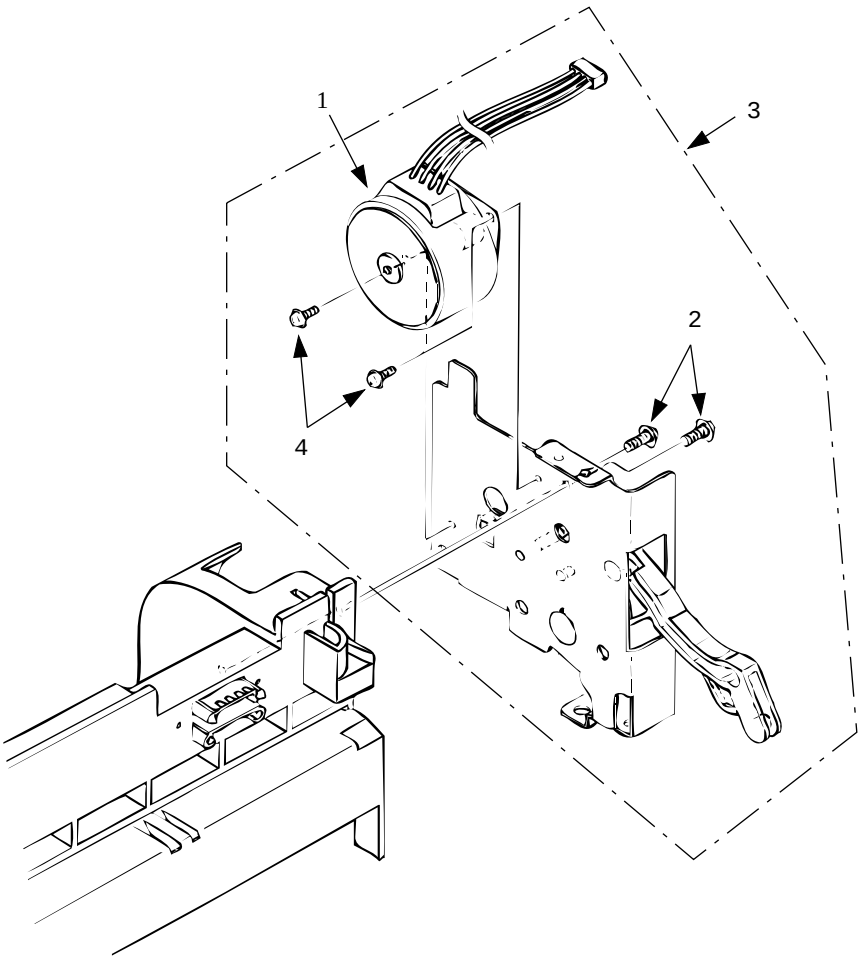
(6) Using a dedicated tool, remove the connector of hopping motor 1 from the square-shaped connector.

(7) Remove the paper supply guide A (see 3.3.13. (7) to (10)).

(8) Remove the lever (R) (see 3.3.10. (6)).

(9) Remove two screws 2 and then remove side plate (R) Assy 3 .

(10) Remove two screws 4 and then remove hopping motor 1 .



3.3.16 Front feeder paper end sensor

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the manual feed hopper Assy (see 3.3.4).

(3) Remove the side cover (R) (see 3.3.5).

(4) Remove the front feeder roller Assy (see 3.3.12. (1) to (3)).

(5) Remove the side plate (R) Assy (see 3.3.15. (1) to (9)).

(6) Using a dedicated tool, remove the connector of front feeder paper end sensor 1 from the square-shaped connector.

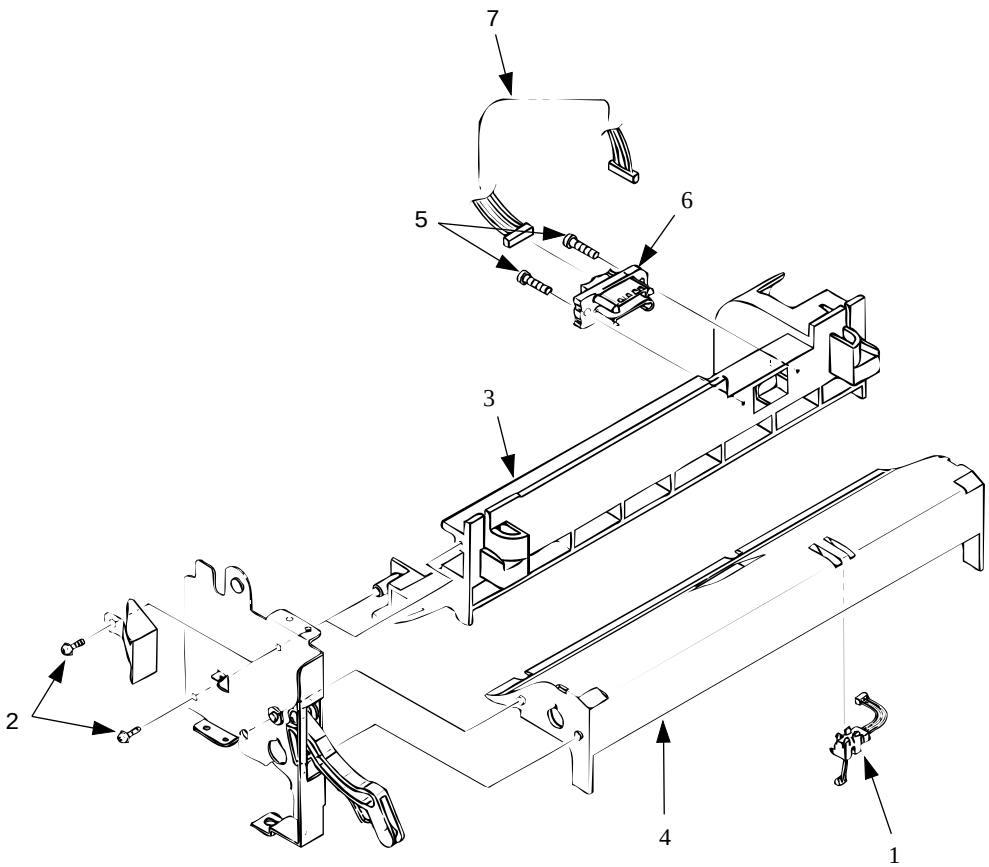
(7) Remove two screws 2 and then remove paper supply guide C 3 .

(8) Remove paper supply guide B 4 .

(9) Remove four claws and then remove front feeder paper end sensor 1 .

(10) Remove two screws 5 and then remove square-shaped connector 6 from paper supply guide C 3 .

(11) Using a dedicated tool, remove the connector cord 7 from the square-shaped connector.



3.3.17 Main chassis unit

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the rear cover (see 3.3.1).

(3) Remove the contact Assy (see 3.3.2).

(4) Remove the side cover (R) (see 3.3.5).

(5) Remove the side plate (R) (see 3.3.6 (1) to (6)).

(6) Remove the stacker cover Assy (see 3.3.7).

(7) Remove the front feeder roller Assy (see 3.3.12, (1) to (3)).
At this time, it is not required to remove the manual feed hopper Assy.

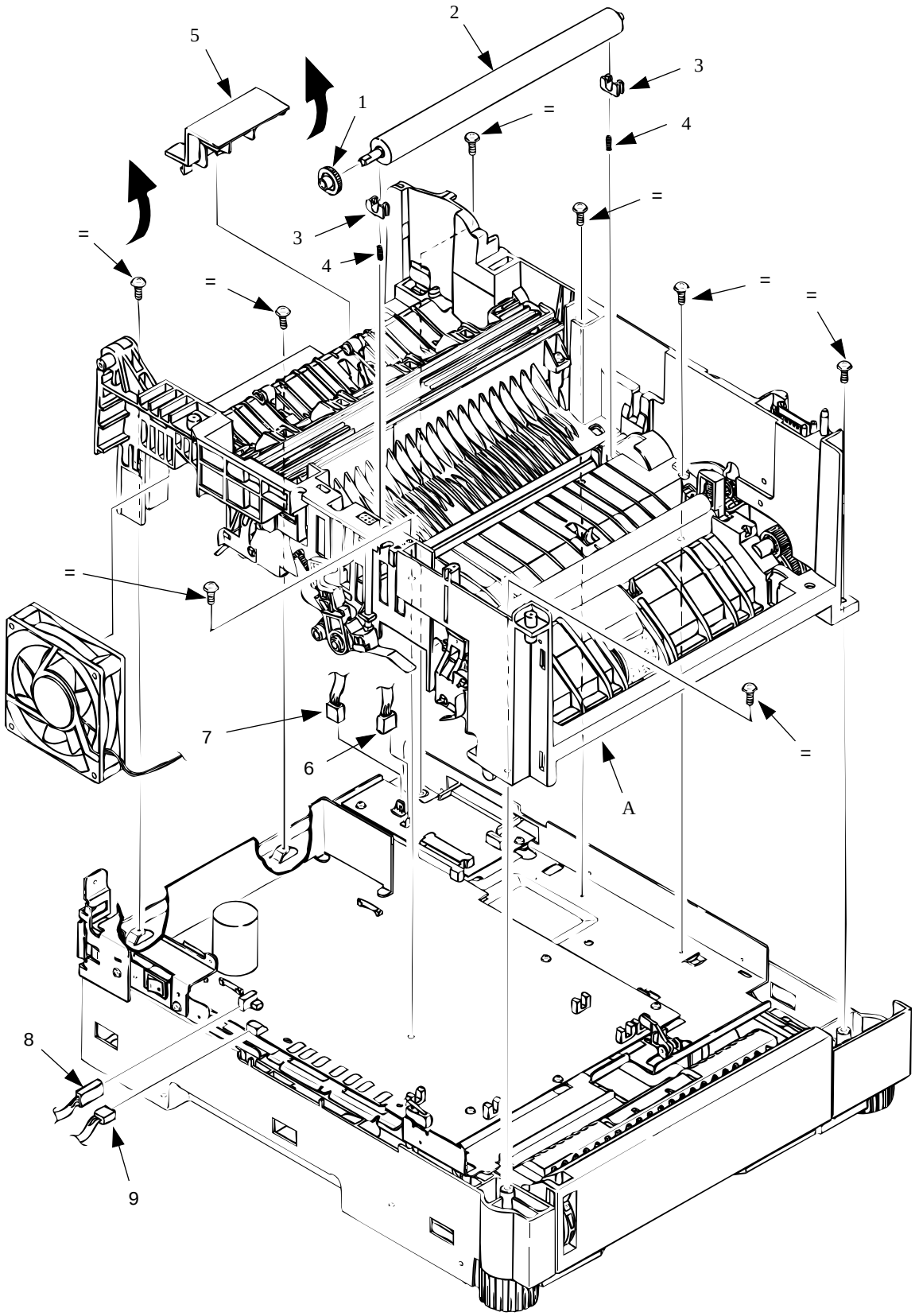
(8) Remove the earth plate (HP).

(9) Lift gear (TR) 1 to unlock it. Remove gear (TR) 1 and transfer roller 2. (At this time, two bearings (TR) 3 and two transfer springs 4 are also removed.)
Do not lose bearings or springs.

(10) Remove connector cover 5 in direction of arrow and then remove four connectors 6 and 7.

(11) Remove the DC Fan motor.

(12) Remove eight screws = and then remove main chassis unit A.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3.3.18 Registration roller

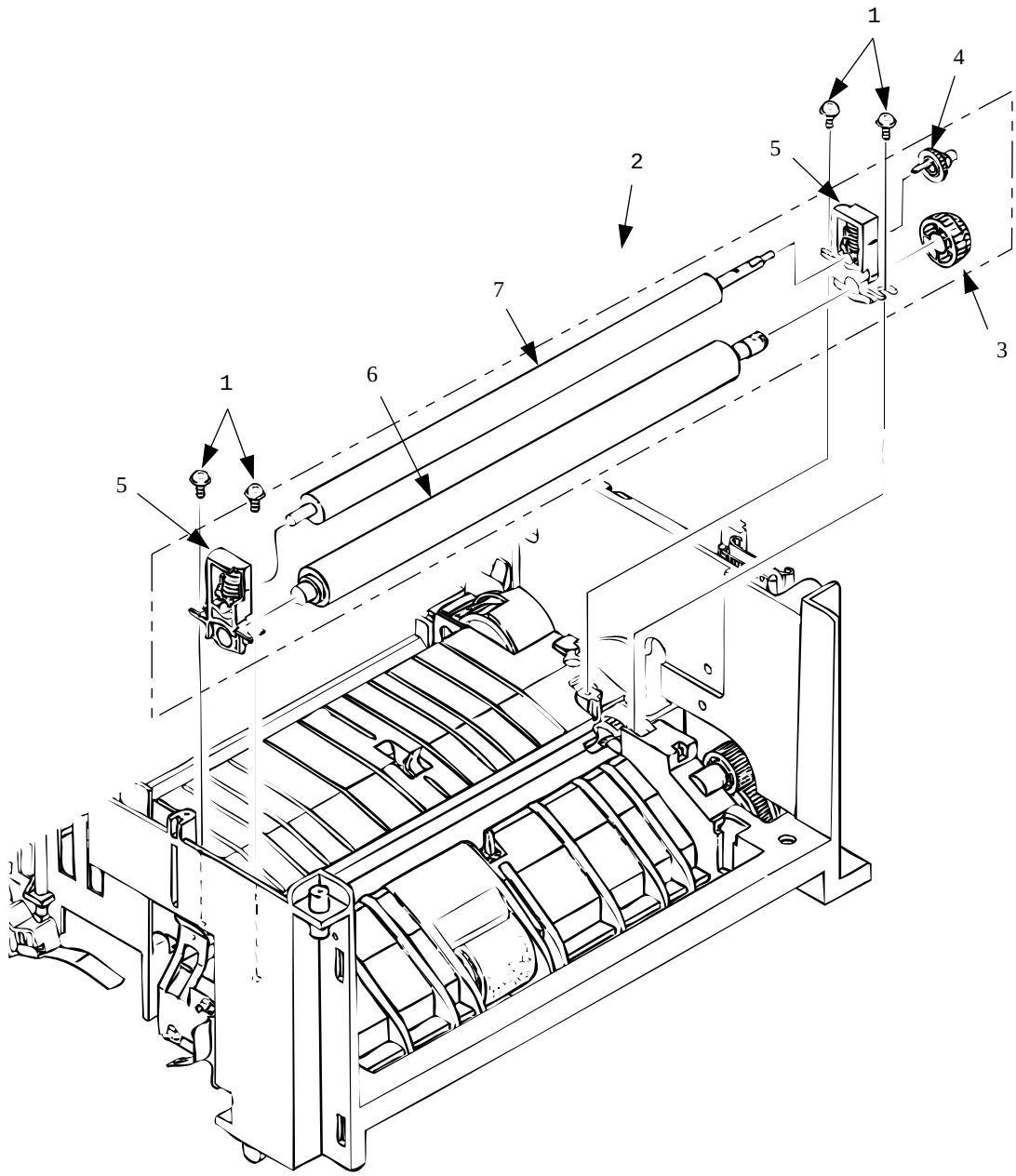
(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the front feeder roller Assy (see 3.3.12. (1) to (3)).

(3) Remove four screws 1 . Lift and remove the registration roller Assy 2 , left side first then right side.

(4) Release the latch and remove registration roller gear 3 and pressure roller gear 4 .

(5) Remove left and right side registration roller bearing Assys 5 and then remove resist roller 6 and pressure roller 7 .



3.3.19 Drum motor

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit (see 3.3.17).

(3) Remove the registration roller Assy (see 3.3.18 (1) to (3)).

(4) Remove fuser Assy.

(5) Release the latch of fuser pressure roller release lever 1 and pull out it toward the right. (At this time, idle gear H 2 is also removed.)

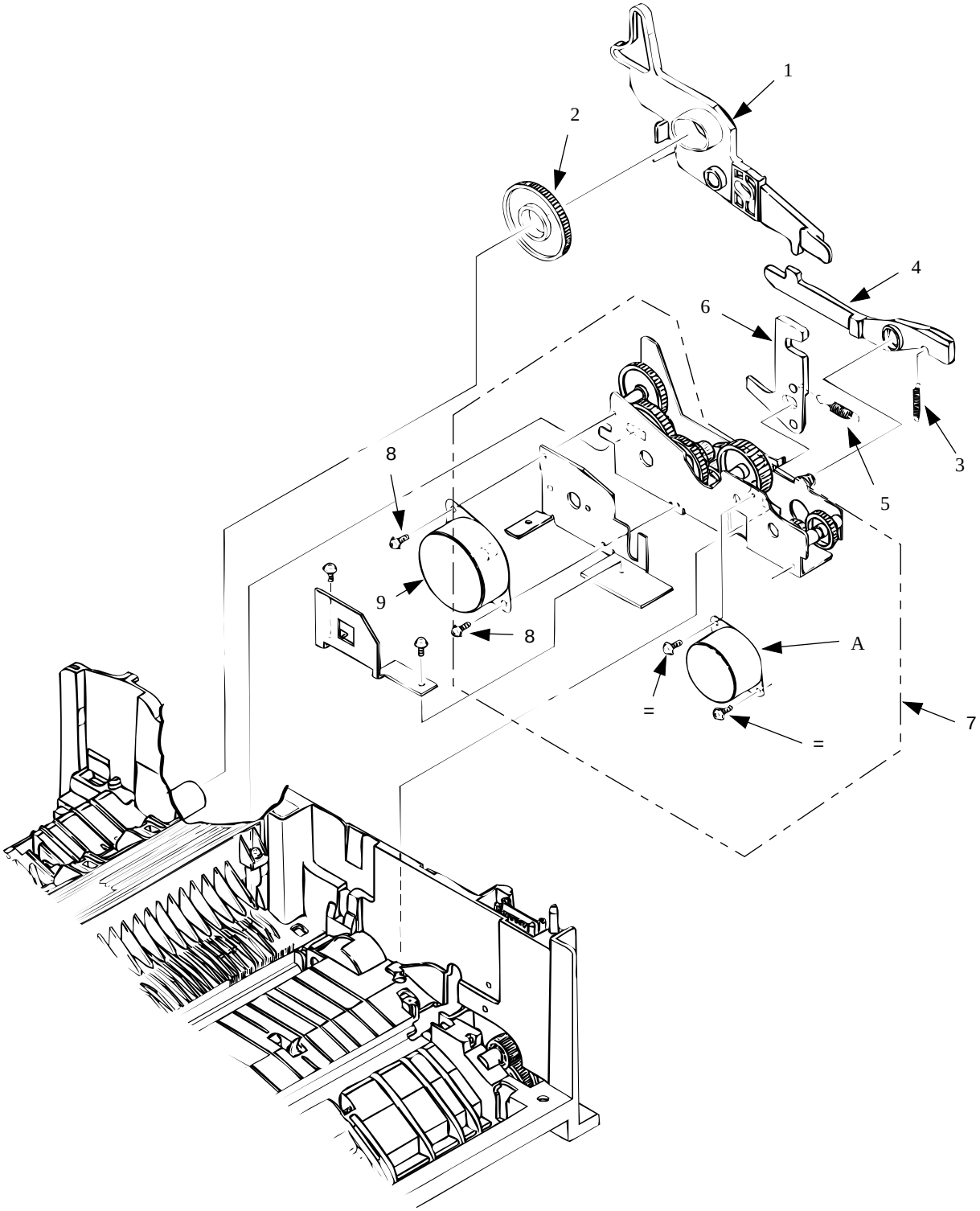
(6) Remove spring 3 and then remove pressure release lever 4. Be careful, do not lose or damage spring.

(7) Remove EP lock spring 5 and then remove ED lock lever 6.

(8) Release two latches and remove motor Assy 7.

(9) Remove two screws 8 and then remove drum motor 9 and heat sink.

(10) Remove two screws = and then remove registration motor A.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3.3.20 Idle gear

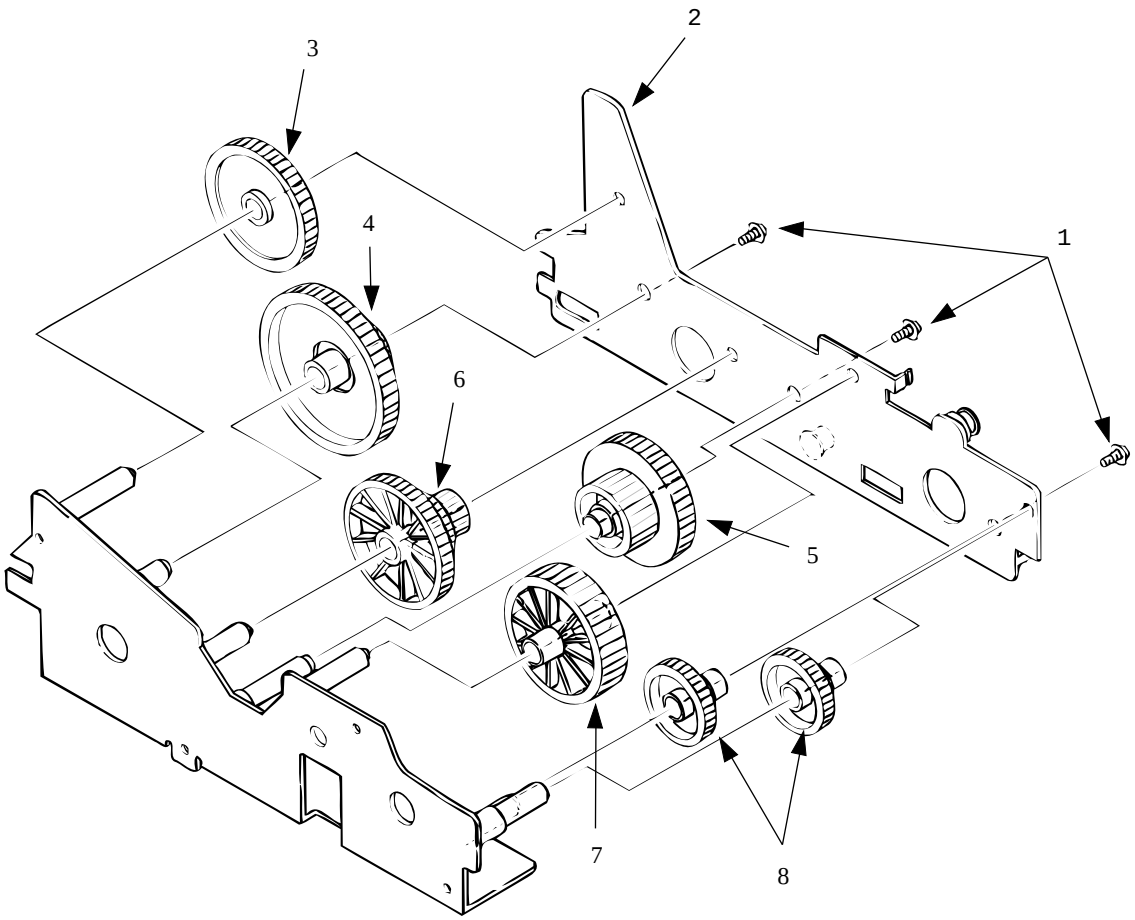
(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit (see 3.3.17).

(3) Remove the motor Assy (see 3.3.19 (1) to (8)).

(4) Remove three screws 1 and then remove motor bracket B 2 .

(5) Remove idler gear E 3 , idle gear D 4 , idle gear B 5 , idle gear C 6 , idle gear A 7 , and two resist idle gears 8 .



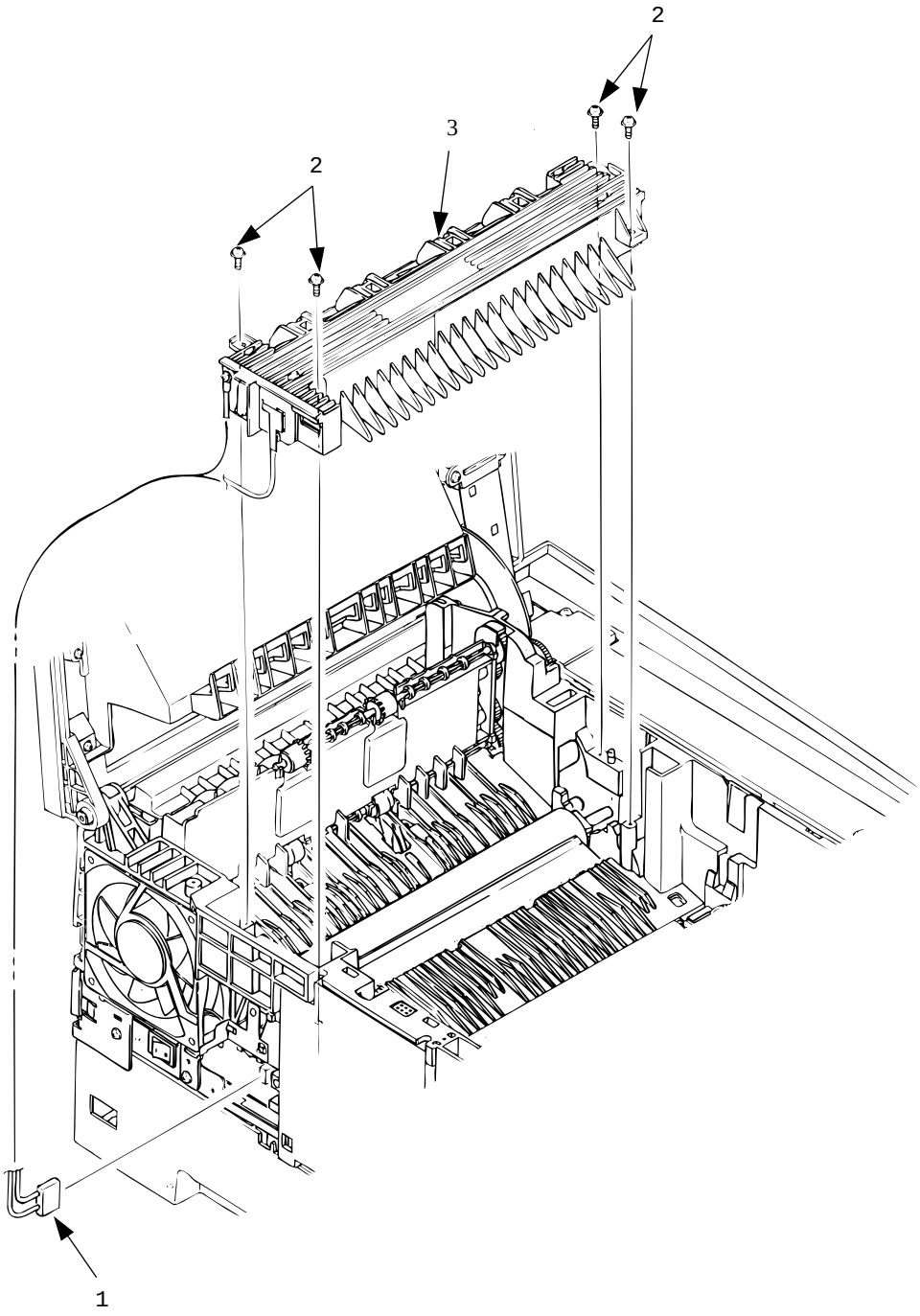
3.3.21 Fusing Assy

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the side cover (L) Assy (see 3.3.1 (1) to (3)).

(3) Unplug connector 1 .

(4) Remove four screws 2 and then remove fusing Assy 3 .



3.3.22 Fuser pressure roller

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

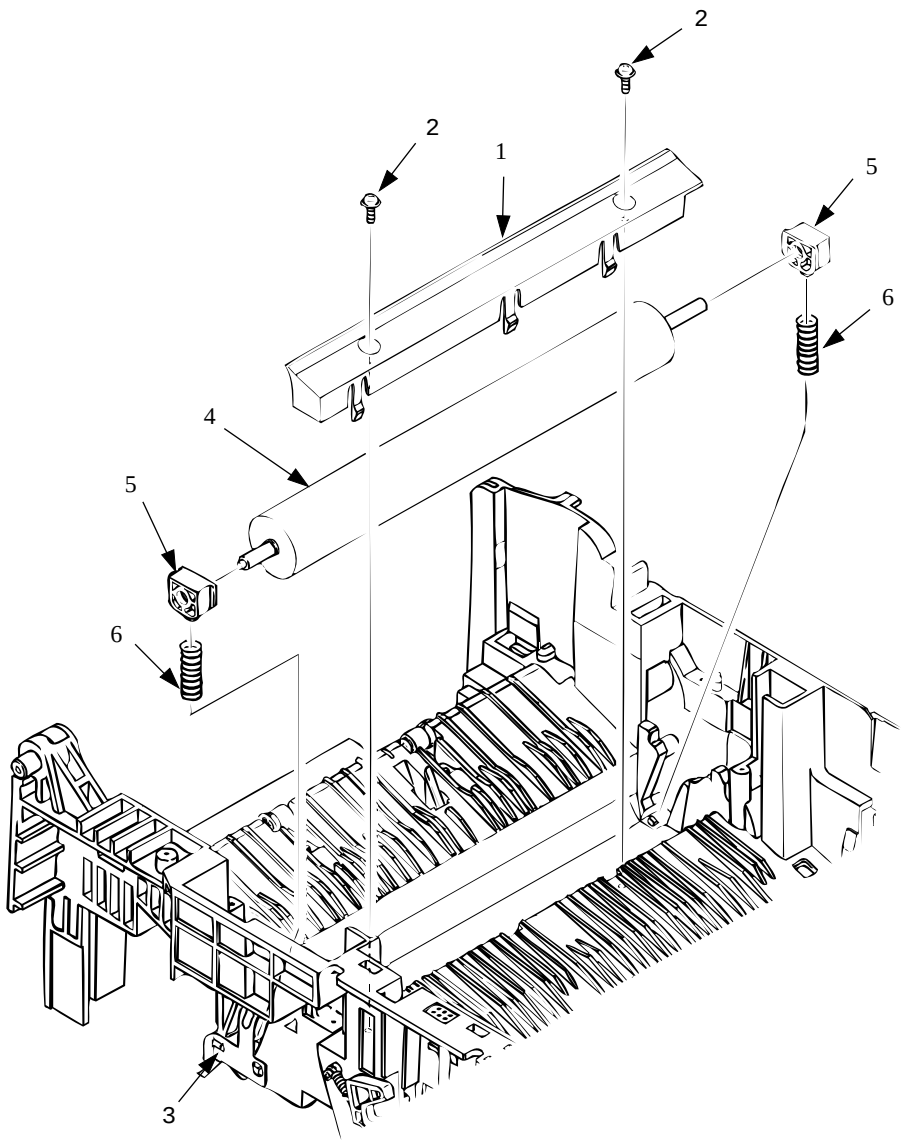
(2) Remove the main chassis unit (see 3.3.17).

(3) Remove the fusing Assy (see 3.3.21).

(4) Remove the fuser pressure roller release lever (see 3.3.19 (5)).

(5) Remove two screws 2 and release three locks on the fusing guide. Remove the fusing guide 1 by pushing it upward from the lower side.

(6) Release the engagement with earth plate L (BK) 3. Lift and remove backup roller 4. (At this time, two backup roller bearings 5 and two bias springs 6 are also removed.)



3.3.23 EP lock shaft

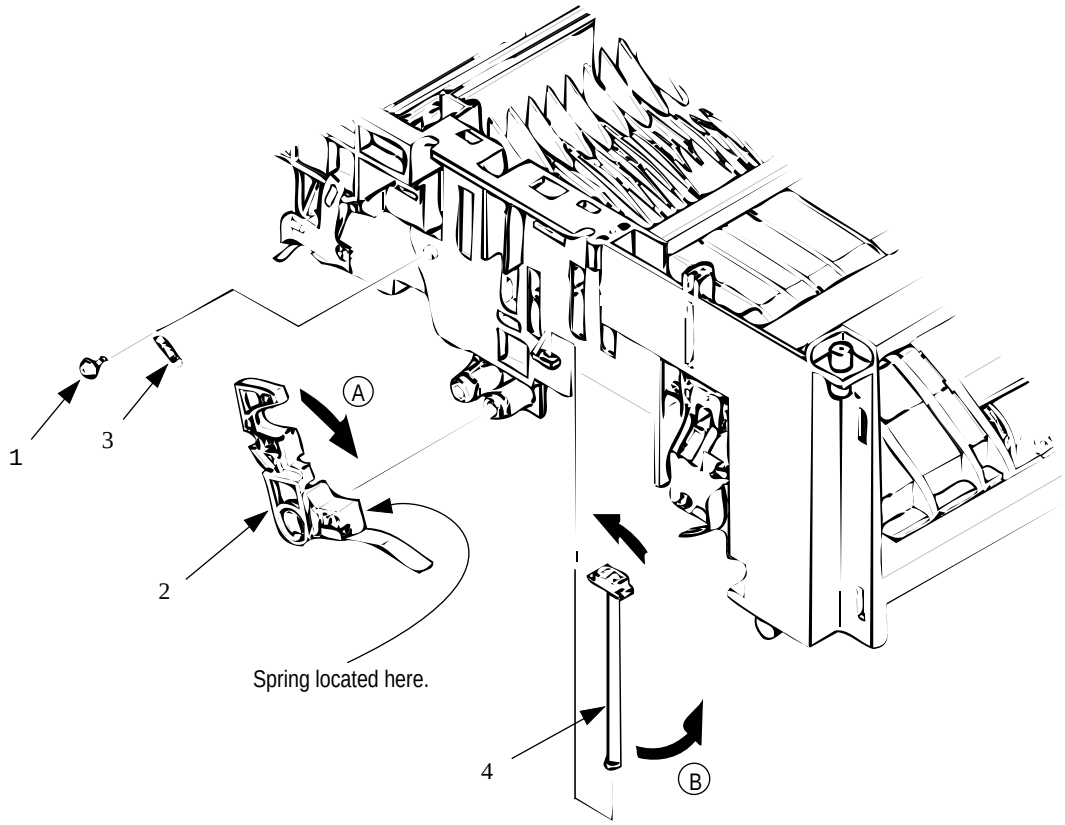
(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit (see 3.3.17).

(3) Remove screw 1. Turn EP lock level (L) Assy 2 in the direction of arrow Ⓐ.

(4) Remove spring 3.

(5) Drop EP lock shaft 4 down and turn in the direction of arrows Ⓑ and remove it.



3.3.24 Hopping roller Assy

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

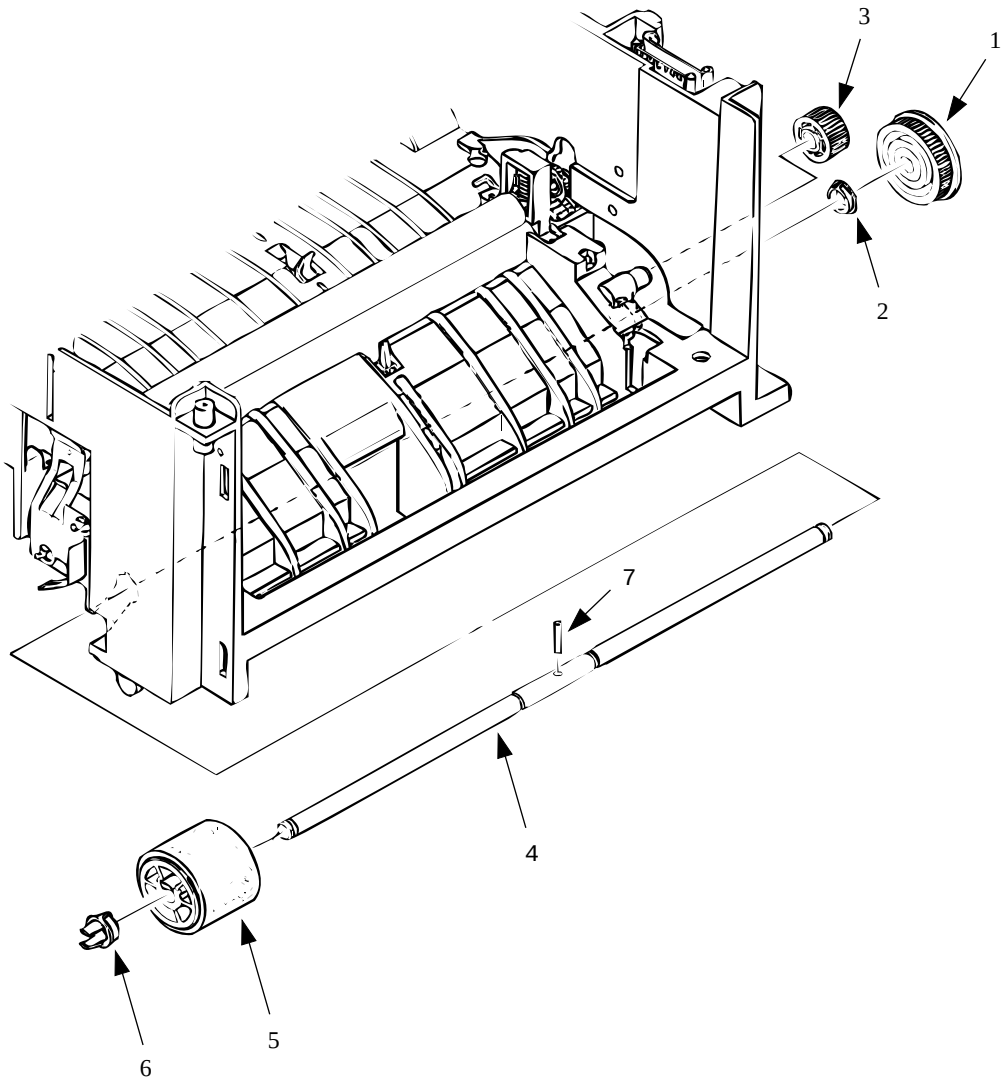
(2) Remove the main chassis unit (see 3.3.17).

(3) Release the latch. Remove hopping roller gear 1 and bearing P 2 . Then, remove idle gear HF 3 .

(4) Remove the left side of hopping roller shaft 4 from the groove. Pull out hopping roller shaft 4 and hopping roller Assy 5 toward the left..

(5) Release the latch and remove bearing L 6 .

(6) Release the latch and remove hopping roller Assy 5 . (At this time, knock pin 7 is also removed. Be careful not to lose the knock pin.)

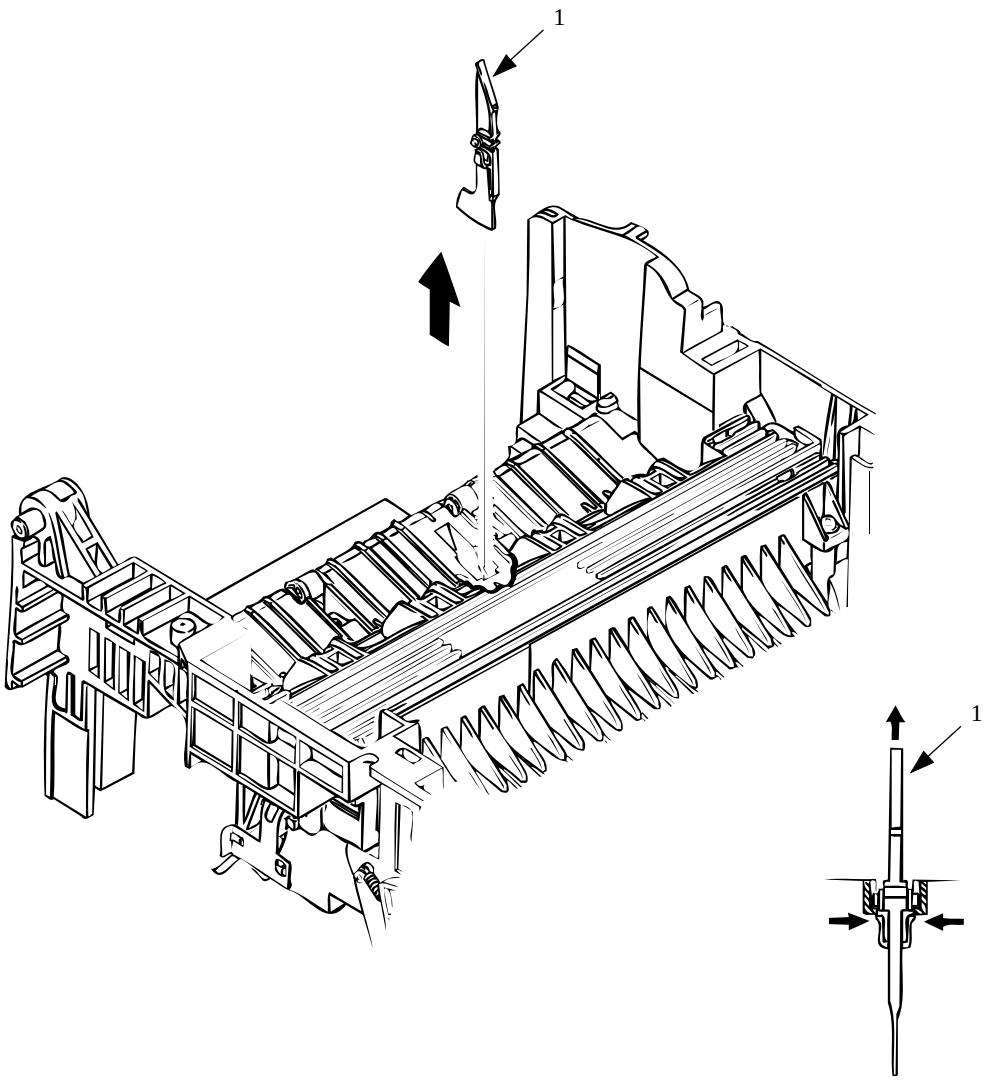


3.3.25 Outlet sensor lever

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit (see 3.3.17).

(3) Press the clamp part of outlet sensor lever 1. Remove the outlet sensor lever 1 by pushing it upward from the lower side.

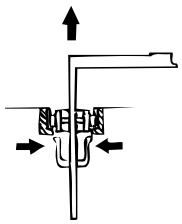


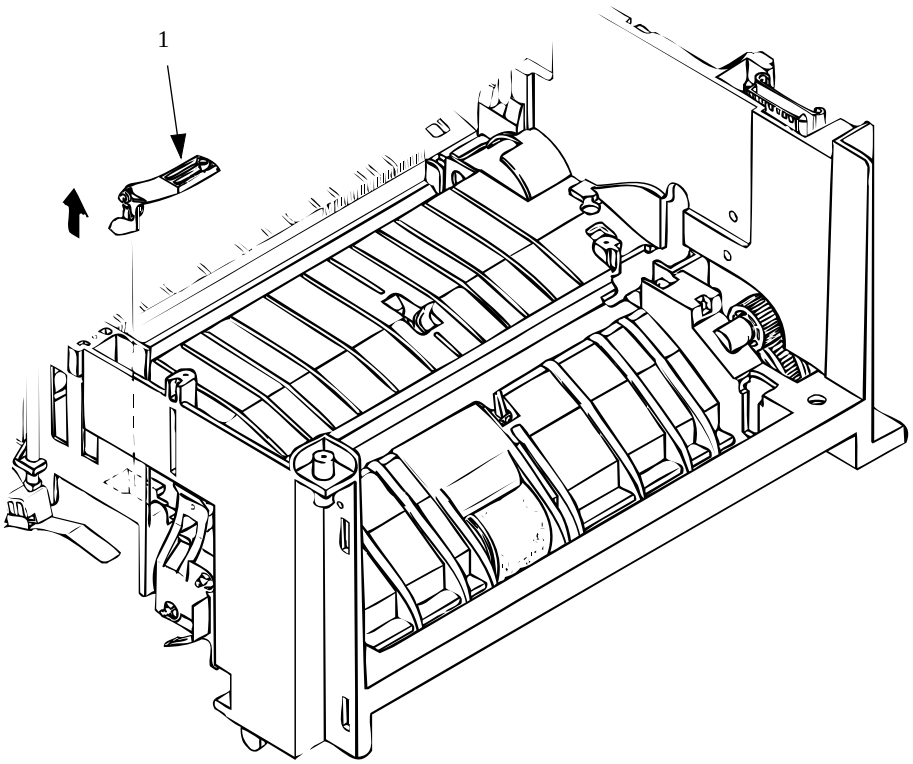
3.3.26 Toner sensor lever

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit (see 3.3.17).

(3) Squeeze the clamp part of toner sensor lever 1 and remove the toner sensor lever 1 by pushing it upward from the lower side.



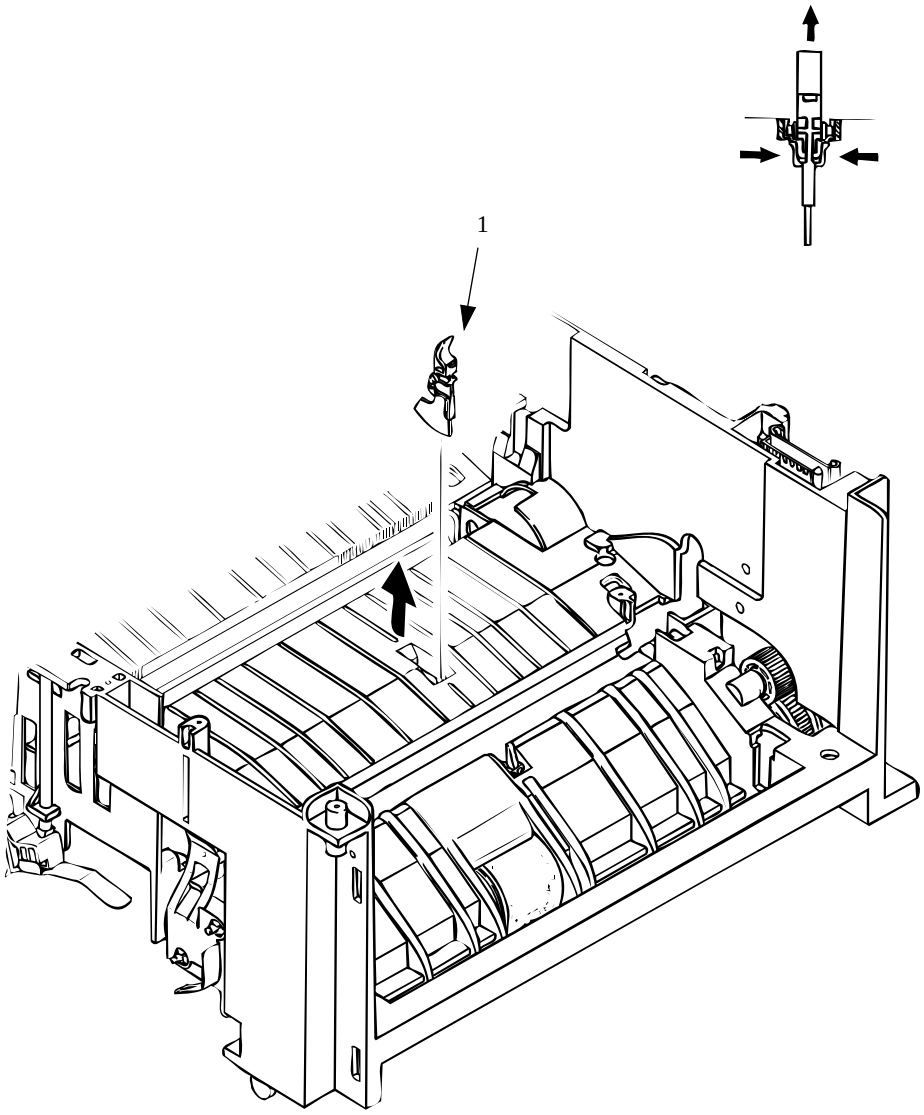


3.2.27 Paper sensor lever

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit (see 3.3.17).

(3) Squeeze the clamp part of the paper sensor lever 1. Remove the paper sensor lever 1 by pushing it upward from the lower side.

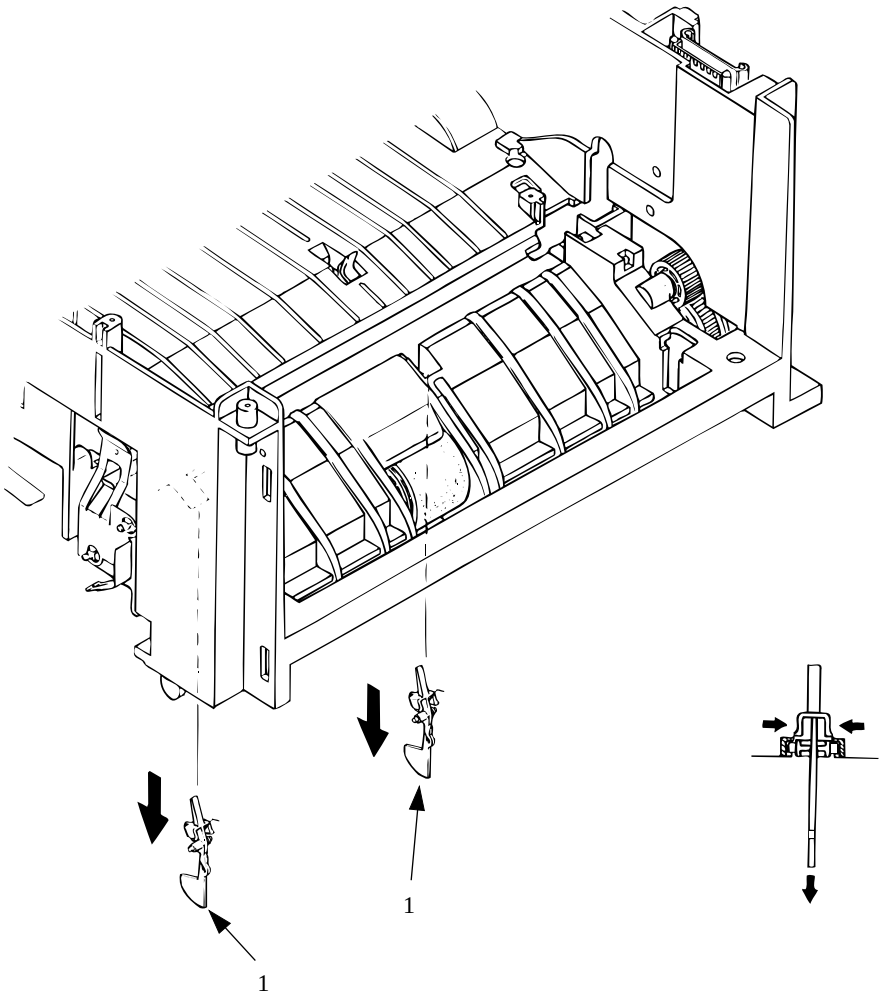


3.3.28 Inlet sensor lever

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit (see 3.3.17).

(3) Squeeze the clamp part of two inlet sensor levers 1. Remove the inlet sensor levers 1 by pushing them downward.



3.3.29 Insulator

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit (see 3.3.17).

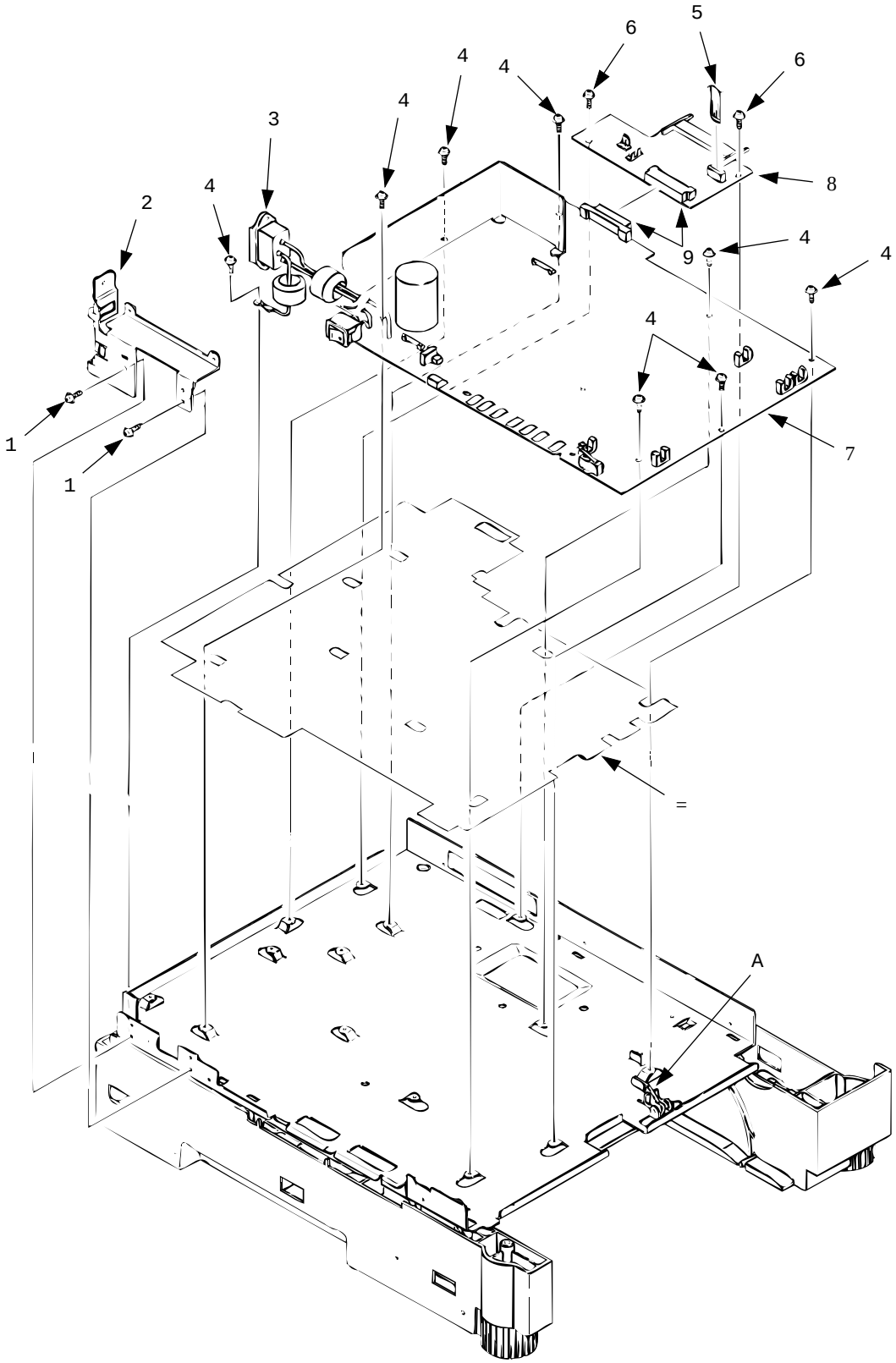
(3) Remove two screws 1 and then remove inlet holder 2. At this time, remove inlet 3 from inlet holder 2.

(4) Remove eight screws 4, connector 5, and two screws 6. Remove Power/sensor PCB 7 together with AOLC-PCB 8.

(5) Unplug connector 9 and remove Power/sensor PCB 7.

(6) Remove insulator =.

Caution: Be careful not to deform the paper end lever A.

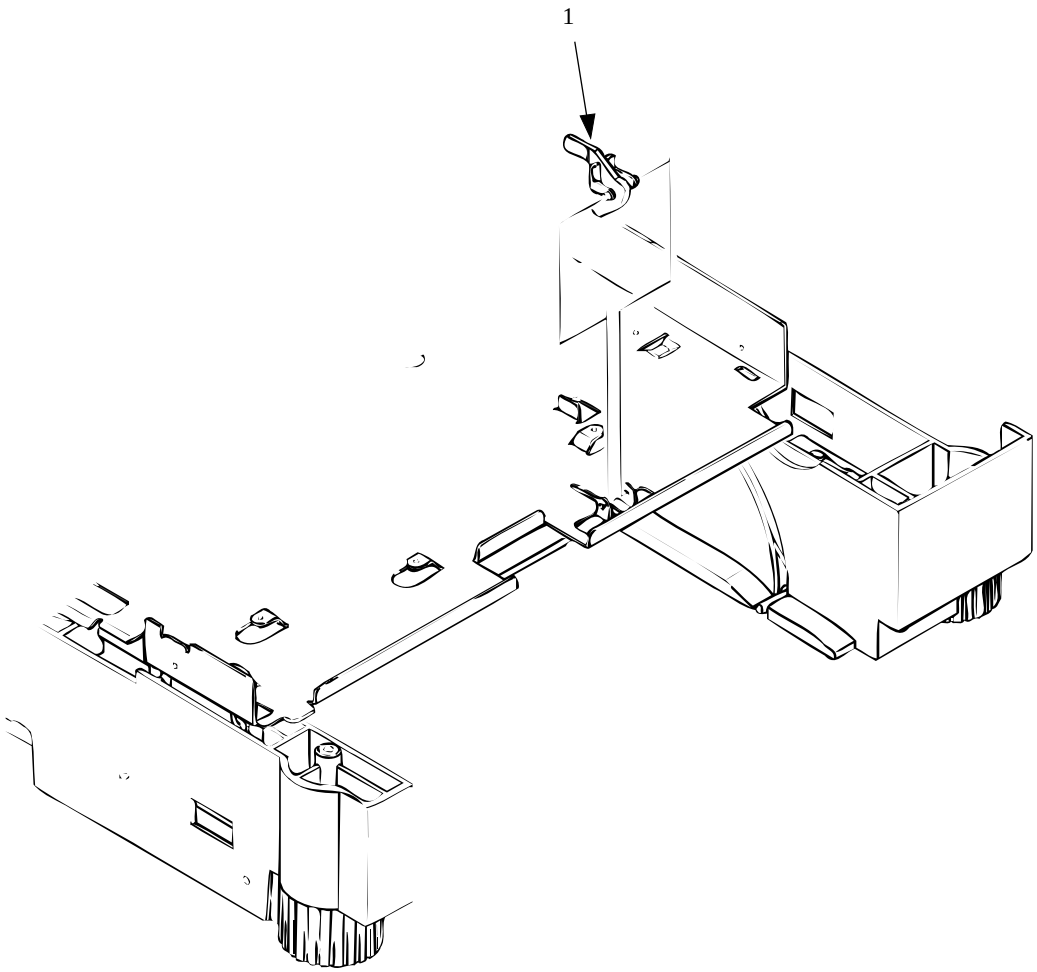

1
1
2
3
4
4
4
4
4
4
4
5
6
6
7
8
9
=
A

3.3.30 Paper end lever

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit (see 3.3.17).

(3) Release the lock and remove paper end lever 1 .



3.3.31 Guide rail (L) Assy

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit (see 3.3.17).

(3) Remove the insulator (see 3.3.29).

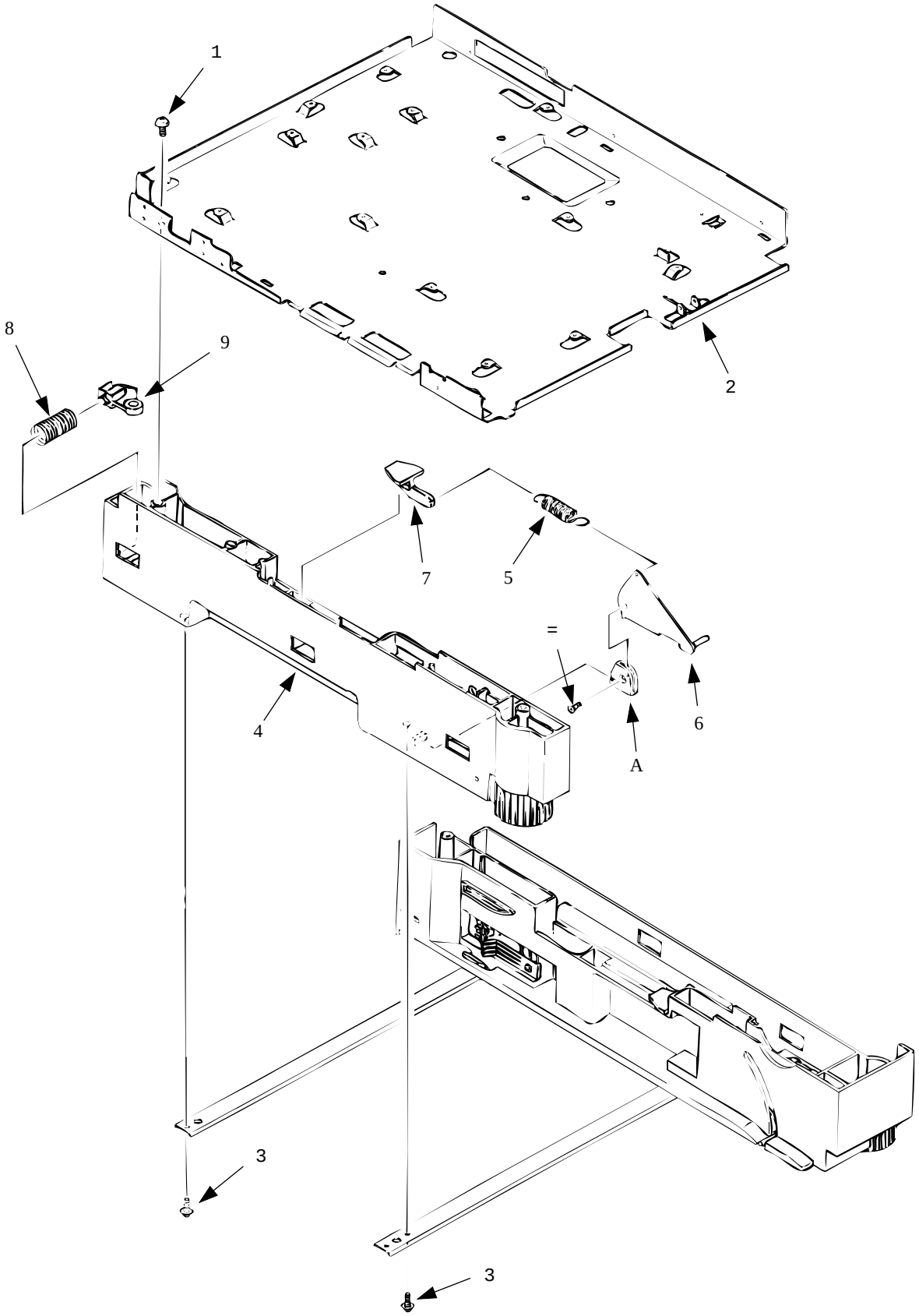
(4) Remove screw 1 and then remove base plate 2.

(5) Remove two screws 3 and then remove guide rail (L) Assy 4.

(6) Remove cassette lock spring 5 and then remove bias link 6 and pull block 7. (Pay attention the direction of hook of cassette lock spring 5.)

(7) Remove spring 8 and then remove cassette stopper 9.

(8) Remove screw 0 from bias link 6 and then remove link support A.


1
2
3
3
4
5
6
7
8
9
A
=

3.3.32 Guide rail (R) Assy

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit (see 3.3.17).

(3) Remove the insulator (see 3.3.29).

(4) Remove screw 1 and then remove base plate 2.

(5) Remove two screws 3 and then remove guide rail (R) Assy 4.

(6) Remove cassette lock spring 5 and then remove bias link 6 and pull block 7 (At this time, earth plate 8 is also removed.)
(Pay attention the direction of hook of cassette lock spring 5.)

(7) Remove spring 9 and then remove cassette stopper =.

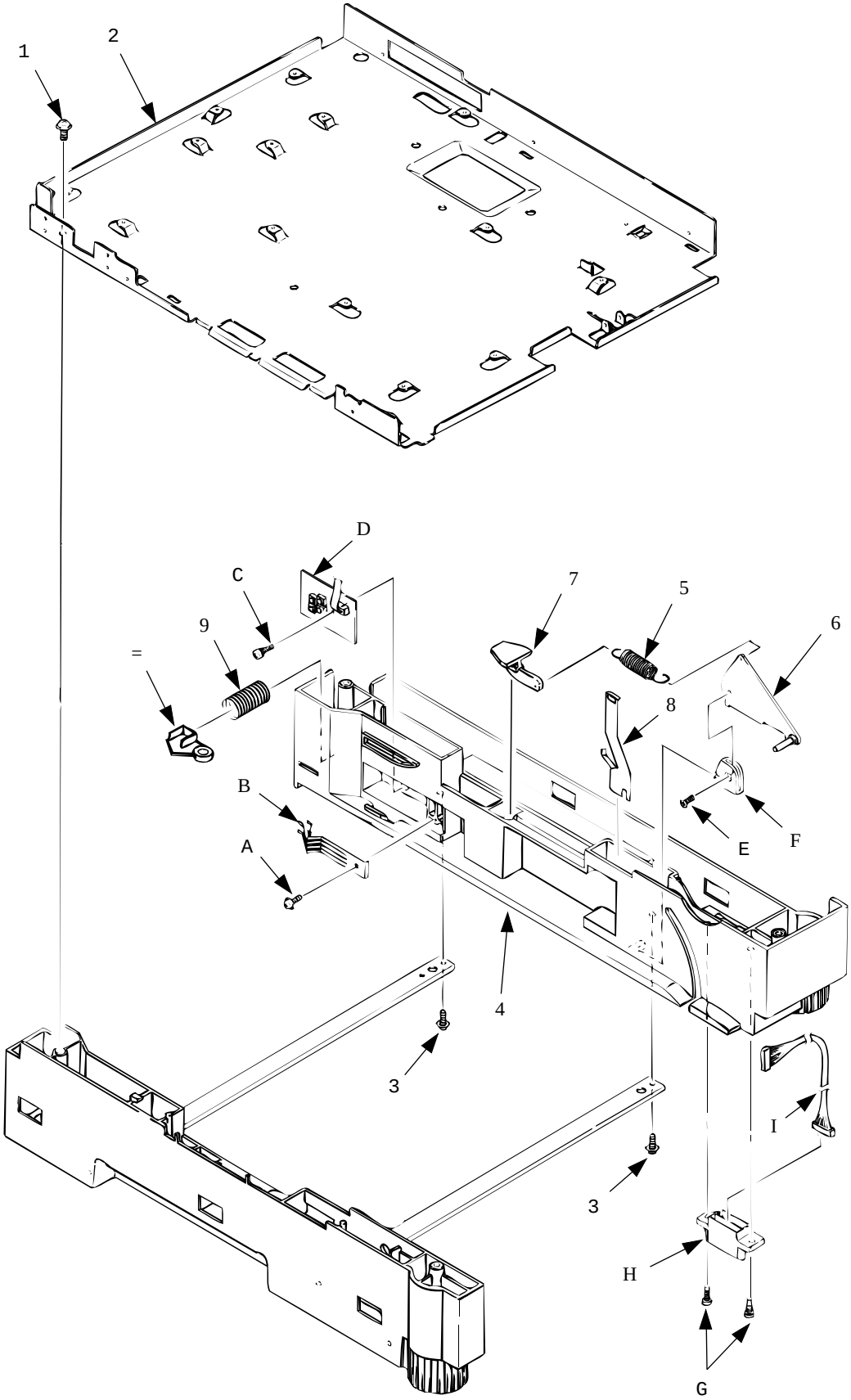
(8) Remove screw A and then remove detector spring B.

(9) Remove screw C and then remove AOLS-PCB D.

(10) Remove screws E from bias link 6 and then remove link support F.

(11) Remove two screws G and then remove square cord from square-shaped connector H.

(12) Using a dedicated tool, remove connector cord I from square-shaped connector H.

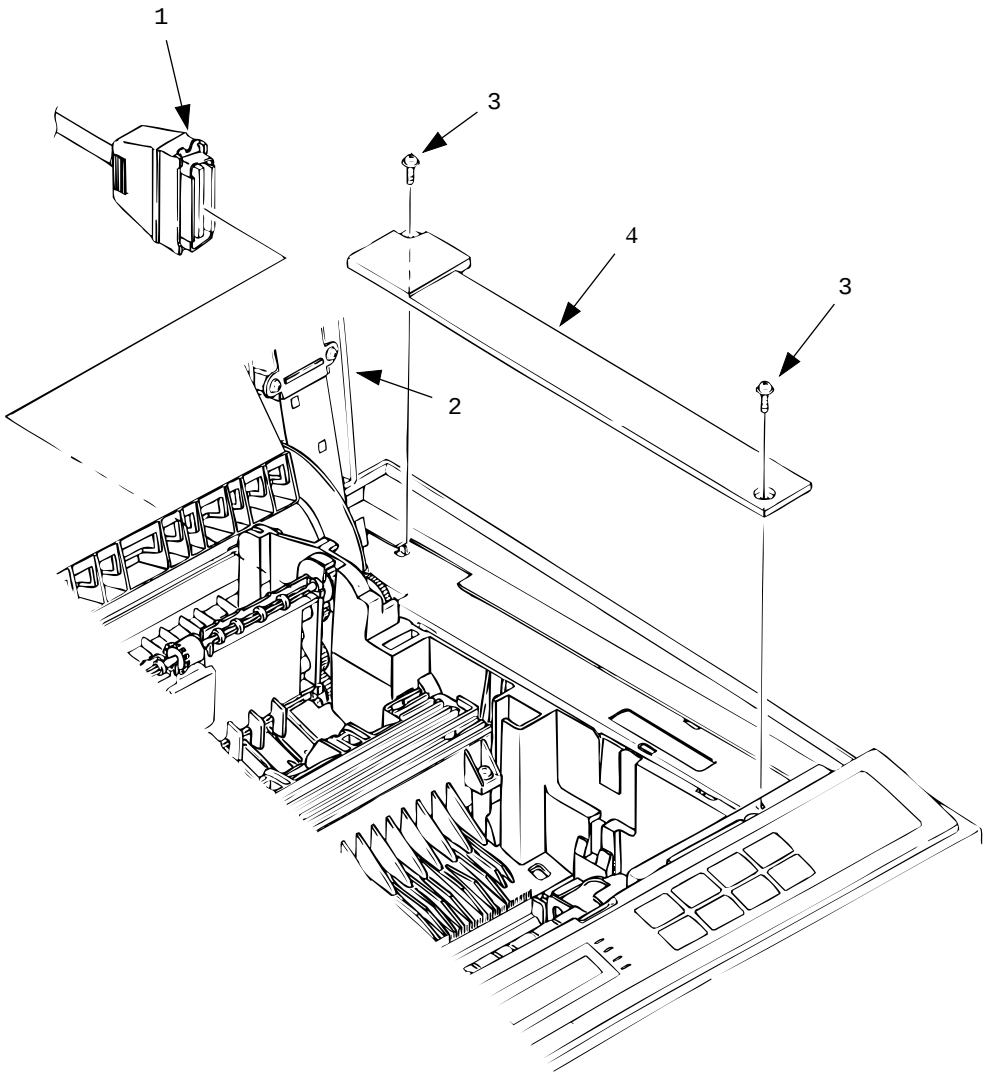

1
2
D
C
9
=
7
5
6
8
B
A
E
F
4
3
3
I
H
G

3.3.33 Cover Frame

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove interface cable 1.

(3) Open stacker cover 2. Remove two screws 3 and then remove Cover Frame 4.



3.3.34 LED head

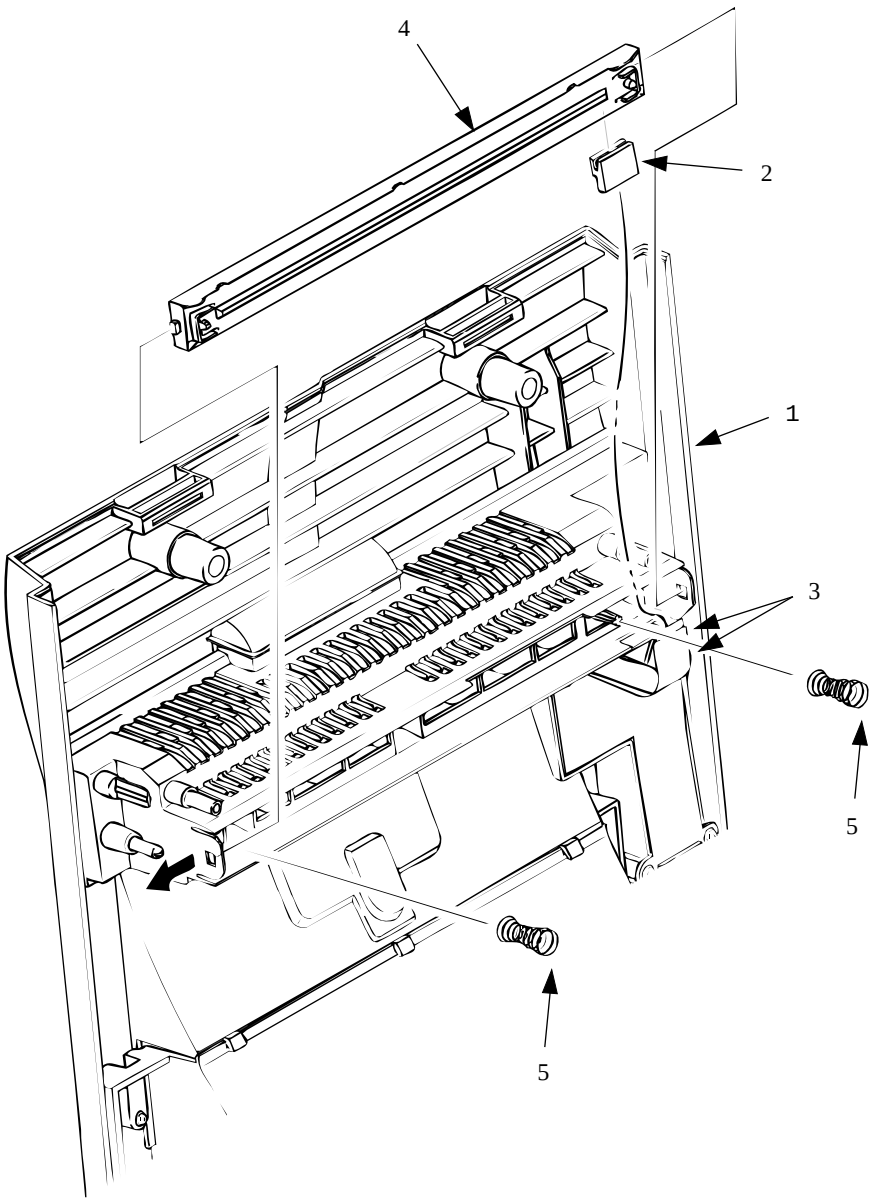
(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Open stacker cover 1.

(3) Remove PC connectors 2 and two LED cables 3 from LED head 4.

(4) Push the hook on the left side of stacker cover 1 in the direction of arrow and remove LED head 4. (Take care not to lose head springs.)

(5) Pull out the head spring 5 from the post.

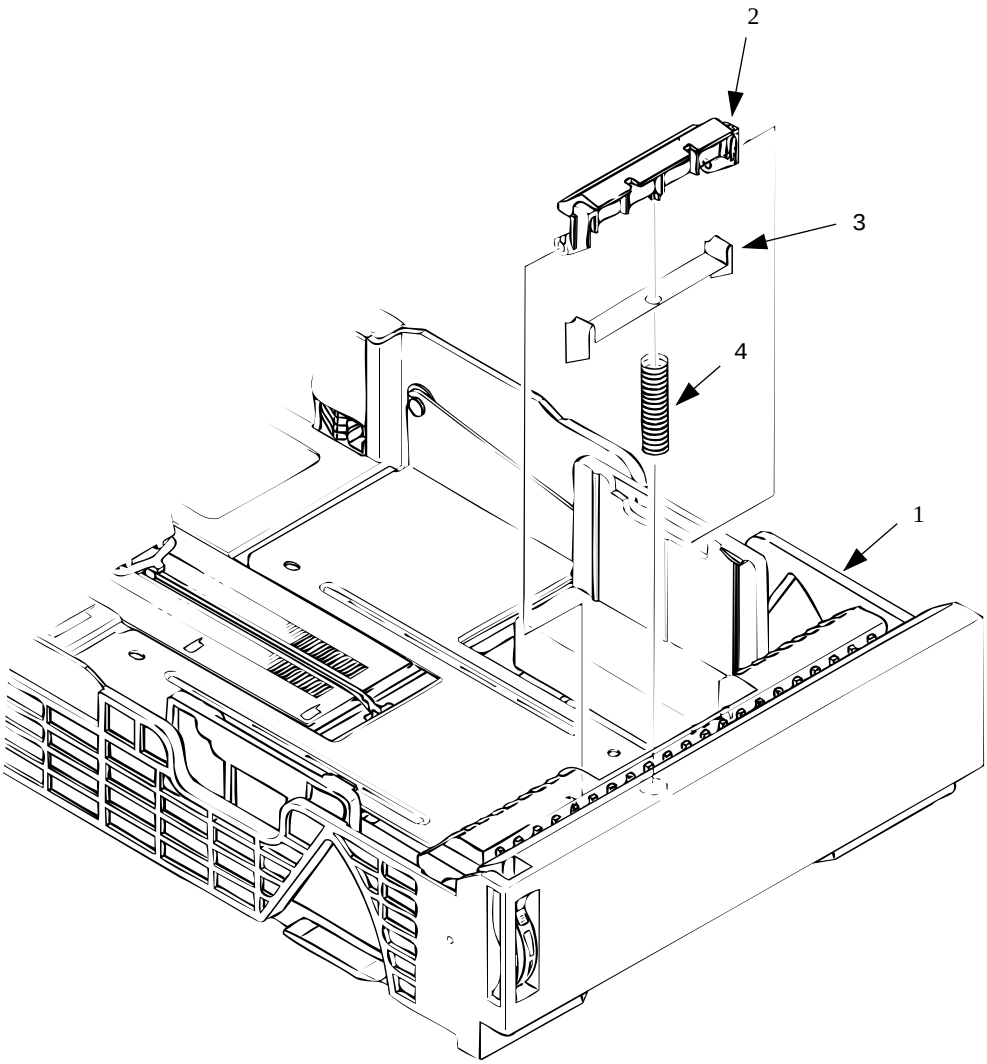


3.3.35 Separator Assy

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Pull out the paper cassette Assy 1 from the printer.

(3) Release two locks and remove separator Assy 2 . (At this time, leaf spring 3 and coil spring 4 are also removed. Be careful not to lose these springs.)



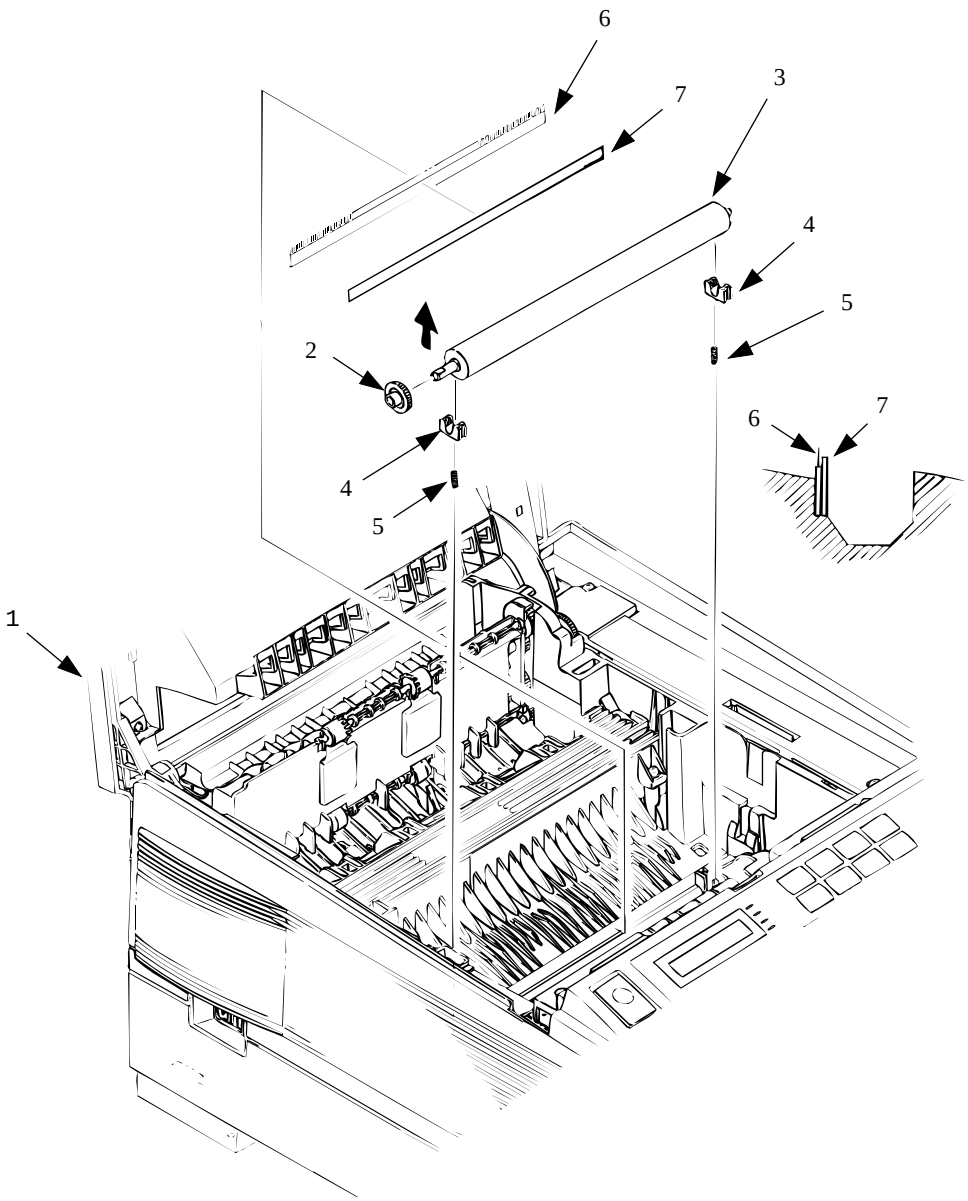
3.3.36 Transfer roller

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Open stacker cover 1.

(3) Lift the left side of the gear TR 2 and release the lock. Remove gear TR 2 and transfer roller 3. (At this time, two bearings (TR) 4 and two transfer roller springs 5 are also removed.)

(4) Remove diselectrification bar 6 and diselectrification film 7 from the chassis unit.



4. ADJUSTMENT

4. ADJUSTMENT

This chapter explains the adjustment necessary when replacing a part. Adjustment is made by changing a parameter value set in EEPROM on the controller PCB. A parameter is able to set with the key operation on the operator panel. This printer has three kinds of the maintenance mode, it is required to select one of the maintenance mode necessary when replacing a part.

4.1 Maintenance Modes And Functions

- **User maintenance mode**

  To enter the user maintenance mode, turn on the POWER switch while pressing the MENU key.

  Function

  There are seven functions as follows.

  - Menu reset
  - Drum counter reset
  - X adjust
  - Setting
  - Hex dump
  - Operator panel menu disable
  - Y adjust

- **System maintenance mode**

  Note: This mode is used only by service persons and it should not be released to the end-users.

  To enter the system maintenance mode, turn on the POWER switch while pressing the RECOVER key.

  Function

  There are 8 functions as follows.

  - Page count display
  - EEPROM reset
  - HSP ERROR Recovery
  - HSP ERROR count reset
  - Page count printing enable/disable
  - Rolling ASCII continus prinitng
  - HSP ERROR count display
  - SIDM enable/disable

- **Engine maintenance mode**

  Note: This mode is used only by service persons and it should not be released to the end-users.

  To enter the engine maintenance mode, turn on the POWER switch while pressing the FORM FEED key and ENTER key.

  Function

  There are 15 functions as follows.

  - Head drive time setting
  - Setting of Head drive timing compensation while OST is on.
  - Compensated head type setting
  - Printing start position setting
  - Drum counter total display
  - Drum count display
  - Setting of standard paper feed length
  - Setting of front feeder paper feed length
  - Setting of second tray paper feed length
  - Selection of second tray feeder download table
  - Setting of envelope feeder paper feed length
  - Selection of envelope feeder download table
  - Fuser count indication
  - Fuser count reset
  - Engine reset

4.1.1 User maintenance mode

- To enter the user maintenance mode, turn the power supply ON while pressing the Menu key.
- This mode uses the menu for function selection.
- The user maintenance mode provides the following functions:

(1) Menu reset

- All settings for Menu level-1 are reset to the factory default values.
  The menus for all executable emulations including options are reset to the factory default values.
- The operation mode starts automatically upon completion of resetting.

(2) Hex dump

- The data received from the host is dumped in hexadecimal notation to the printer.
- Printing is activated automatically when the received data exceeds one page. If the received data is less than one page, printing can be activated manually be pressing the Form Feed key after selecting the OFF LINE mode by pressing the ON-LINE key. (Automatic activation of printing even when the received data is less than one page by selecting the Auto Eject function on the menu.)
- To exit from this mode is turning the power OFF.

(3) Drum counter reset

- This function resets the drum life data when the user replaces the image drum unit.
- The operation mode starts automatically upon completion of resetting.

(4) Operator panel menu disable

- This function is for enabling and disabling the operator panel menu functions (Menu 1, Menu 2, Tray Select, Copies and Paper Size).

(5) X ADJUST

- This function is used to adjust the printing start position within the range of ±2 mm in 0.25 mm steps in the X direction.

(6) Y ADJUST

- This function is capable to adjust the printing start position within the range of ±2 mm in 0.25 mm steps in the Y direction.

(7) SETTING

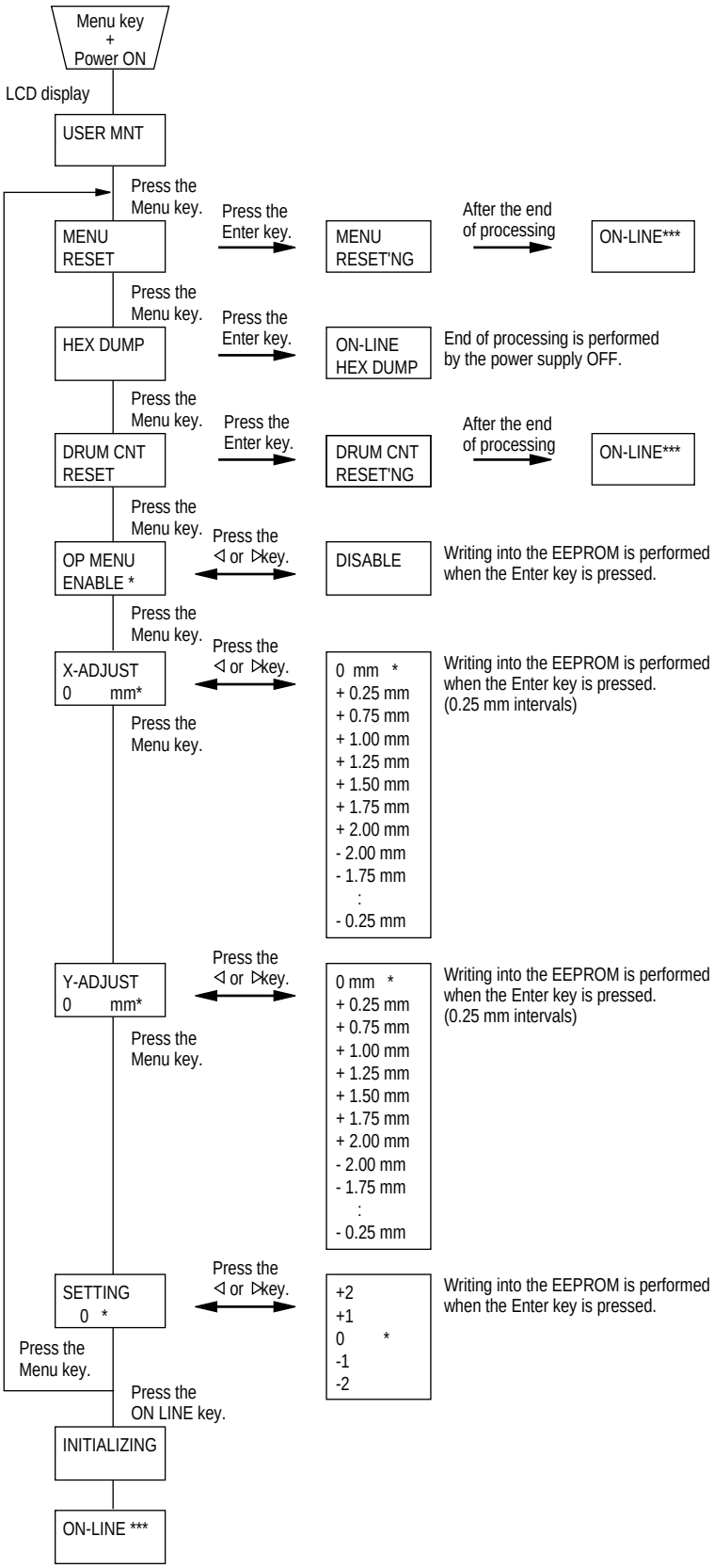
- This function is used to adjust to improve print quality.

  −2, −1 } Rough/thick paper, low temperature/humidity and/or blockly faded print appeared.

  0 Normal media/environmental conditions.

  +1, +2 } Rough papers, high temperature/humidity and/or snowy print of high density pattern.

User maintenance mode menu system



4.1.2 System maintenance mode

- The system maintenance mode is set when the power is turned ON while pressing the Recover key.
- This mode adopts the menu for function selection.
- The system maintenance mode is provided with the following functions:

(1) Page count display

- The total number of pages counted at the engine is displayed on the LCD.

(2) Page count printing enable/disable

- This function selects whether to include (enable) or exclude (disable) the total number of printed pages counted at the engine at the time of menu printing.

(3) Rolling ASCII continuous printing

- The rolling ASCII pattern is printed continuously for various engine tests.
- Press the ON-LINE key to cancel this mode.

(4) EEPROM reset

- All EEPROM areas including Menu level-2 to the factory default values.
- The following items are excluded
  Head drive time setting

  Fine adjustment of printing start position

  Standard tray paper feed amount setting
- Transition to the operation mode occurs upon completion of resetting.
- Press the Menu key to update each category.
  The operation returns to the first category after updating the last category.

(5) HSP ERROR recovery

- Select HSP ERROR recovery function either recover or stop.

(6) HSP ERROR count

- Display total HSP ERROR count.

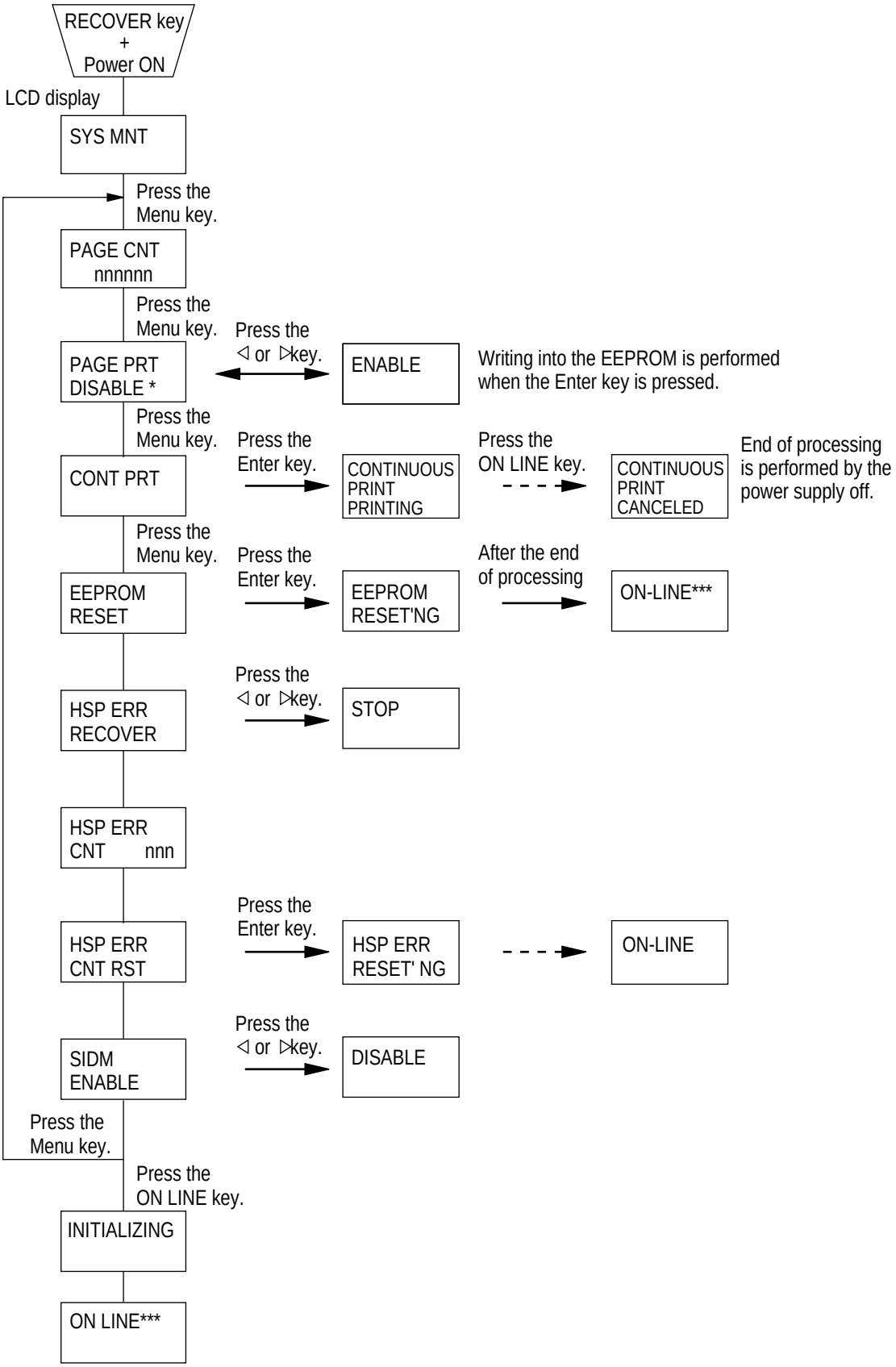
(7) HSP ERROR count reset

- Reset the HSP ERROR counter.

(8) SIDM enable/disable

- If it's selected disable, cannot select SIDM emulations by Menu.

System maintenance mode menu system



4.1.3 Engine maintenance mode

- The engine maintenance mode is activated when the power is turned ON while pressing to the Form Feed key and Enter key.
- This mode adopts the menu for function selection.
- The method for exit from this mode depends on the setting.
- The engine maintenance mode is provided with the following functions:

(1) Head drive time setting

- Sets the drive time of the LED head.

(2) Setting of Head drive timing compensation while OST is on

- This function sets head drive timing compensation level while OST is on at 600DPI mode.

(3) Compensated head type setting

- This function sets type of the compensated head.

(4) Printing start position setting

- Sets the printing start position.

(5) Drum count total display

- Displays on the LCD the total number of drum revolutions in the unit counted at the engine.

(6) Drum count display

- Displays on the LCD the total number of EP drum revolutions counted at the engine.

(7) Setting of standard tray paper feed length

- This function sets the paper feed length of standard tray paper.

(8) Setting of front feeder paper feed length

- This function sets the paper feed length of the front feeder.

(9) Setting of High Capacity Second Paper Feeder paper feed length

- This function sets the paper feed length of the High Capacity Second Paper Feeder.

(10) Selection of High Capacity Second Paper Feeder download table

- This function selects the download table for the High Capacity Second Paper Feeder.

(11) Setting of Multi Feeder paper feed length

- This function sets the paper feed length of the Multi Feeder.

(12) Selection of Multi Feeder download table

- This function selects the download table for the Multi Feeder.

(13) Fuser count display

- Displays on the LCD the total number of printed pages counted at the engine.

(14) Fuser count reset

- When the fuser unit is replaced, the maintenance person uses this fuser count reset function to reset the fuser lifetime.
- After the fuser counter is reset, the engine enters into the operation mode automatically

(15) Engine reset

- All EEPROM areas used by the engine are reset to the factory default values.
- The following items are excluded:

  Menu level-1

  Menu level-2

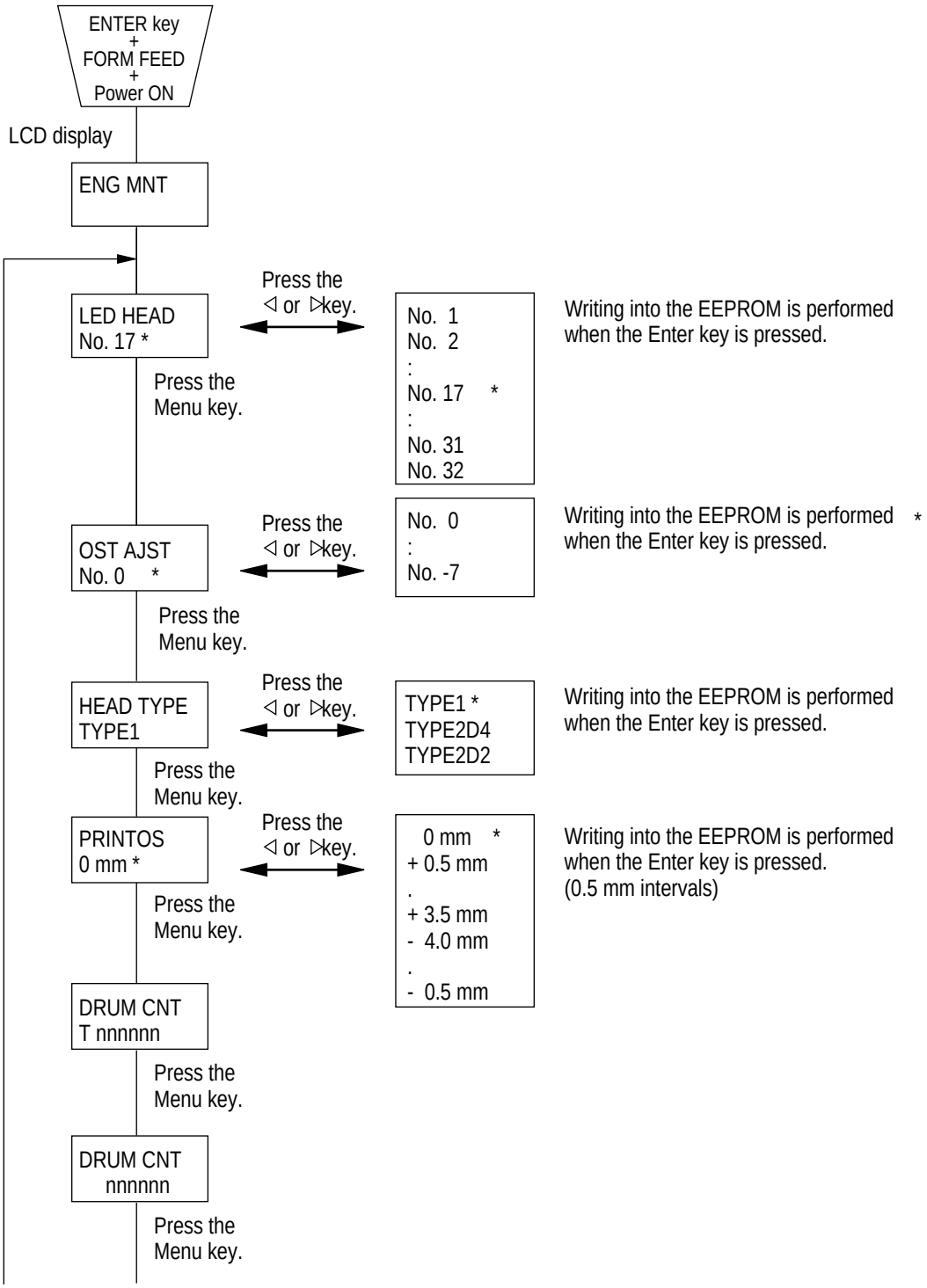
  Operator panel menu disable/enable

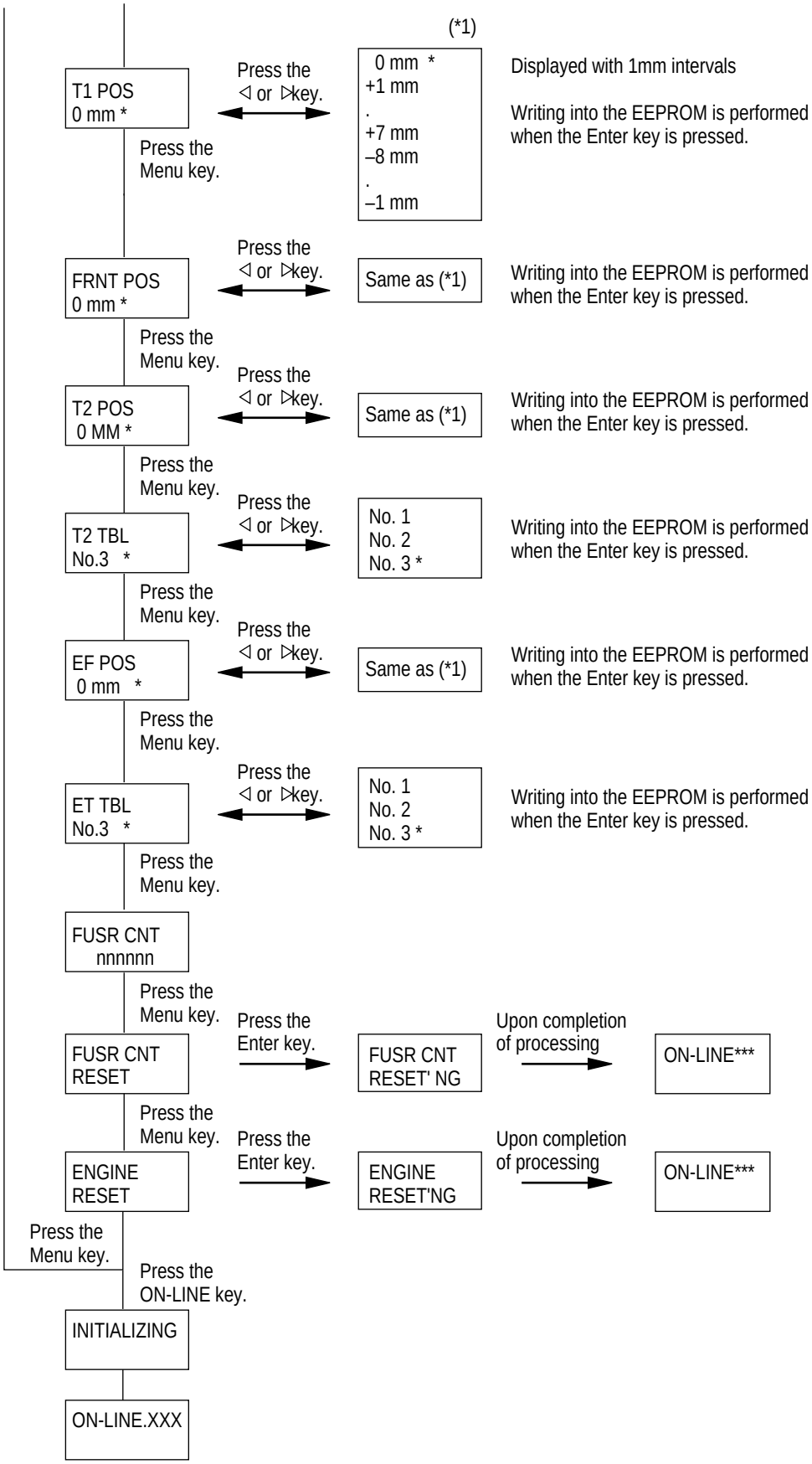
  Page print disable/enable

- Transition to the operation mode occurs upon completion of resetting.

Note: Do not change the default value of (2), (5), (8) ~ (13) they are the parameter for adjusting in the factory.

- Engine maintenance mode menu system




(*1)
T1 POS
0 mm *
Press the
◁ or ▷key.
0 mm *
+1 mm
.
+7 mm
–8 mm
.
–1 mm
Displayed with 1mm intervals
Writing into the EEPROM is performed when the Enter key is pressed.
Press the
Menu key.
FRNT POS
0 mm *
Press the
◁ or ▷key.
Same as (*1)
Writing into the EEPROM is performed when the Enter key is pressed.
Press the
Menu key.
T2 POS
0 MM *
Press the
◁ or ▷key.
Same as (*1)
Writing into the EEPROM is performed when the Enter key is pressed.
Press the
Menu key.
T2 TBL
No.3 *
Press the
◁ or ▷key.
No. 1
No. 2
No. 3 *
Writing into the EEPROM is performed when the Enter key is pressed.
Press the
Menu key.
EF POS
0 mm *
Press the
◁ or ▷key.
Same as (*1)
Writing into the EEPROM is performed when the Enter key is pressed.
Press the
Menu key.
ET TBL
No.3 *
Press the
◁ or ▷key.
No. 1
No. 2
No. 3 *
Writing into the EEPROM is performed when the Enter key is pressed.
Press the
Menu key.
FUSR CNT
nnnnnn
Press the
Menu key.
FUSR CNT
RESET
Press the
Enter key.
FUSR CNT
RESET' NG
Upon completion
of processing
ON-LINE***
Press the
Menu key.
ENGINE
RESET
Press the
Enter key.
ENGINE
RESET'NG
Upon completion
of processing
ON-LINE***
Press the
Menu key.
Press the
ON-LINE key.
INITIALIZING
ON-LINE.XXX

4.1.4 EEPROM initialization

The corresponding area of the EEPROM is initialized for each event as shown Table 4-1.

Table 4-1

EEPROM area / Event	Menu level 1	Menu level 2	F/W revision area	Information for destination	Engine area	Drum counter	Fuser counter	Page counter	XY adjust	LED haed drive time	Remarks
Menu resetting for user maintenance	○										
EEPROM resetting for system maintenance	○	○							○		
Engine resetting for engine maintenance					○	○	○	○			
Firmware revision check error LCD display: EEPROM RESETTING	○	○	○						○		This intialization occurs when the existing ROM is replaced by a ROM whose revision No. is different from the existing ROM.
Engine revision error LCD display: ENGINE RESET					○	○	○	○		○	This intialization occurs when a new EEPROM is mounted.
Engine ID error LCD display: ENGINE RESET					○	○	○	○		○	
Setting of data for destination	○	○		○					○		
User information error LCD display: EEPROM RESETTING	○	○		○					○		This resetting occurs when an irregular user information is detected.

○ : shows initialization

4.2 Adjustment When Replacing A Part

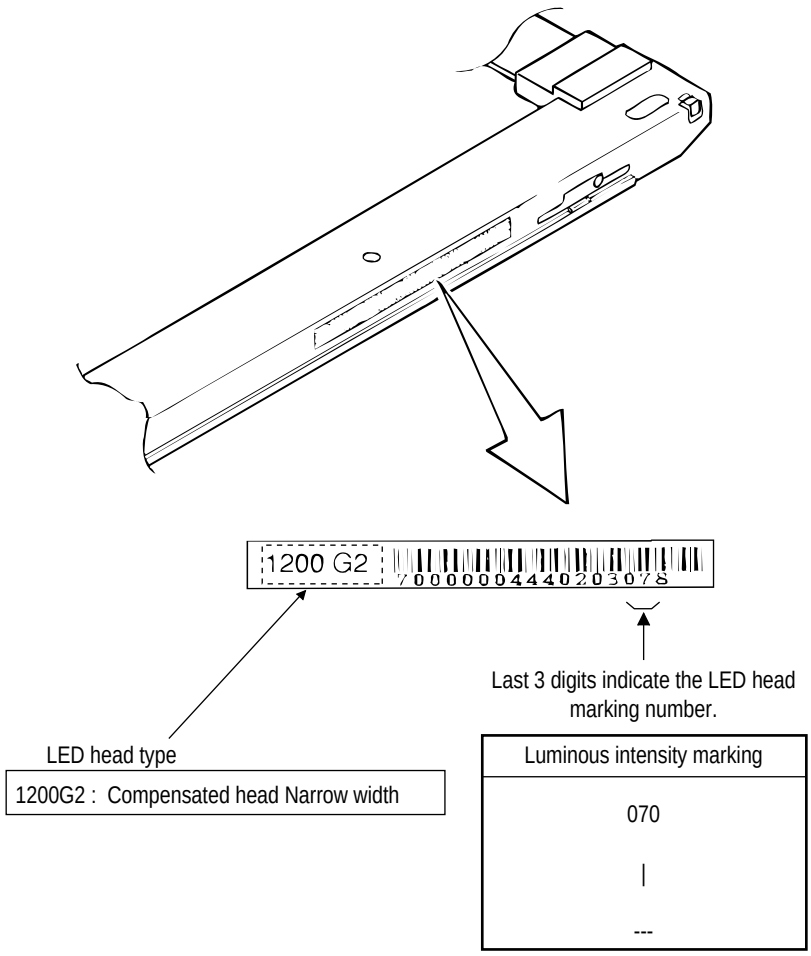
Adjustment necessary when replacing one of the followimg parts.

Part Replaced	Adjustment
LED Head	Set the LED head drive time. (Refer to Chapter 4.2.1)
Image Drum Cartridge	Reset the image drum counter. (Refer to User's manual)
Fuser Unit	Reset the fuser counter. (Refer to Chapter 4.2.2)
EEPROM	Set the LED head drive time. (Refer to Chapter 4.2.1)

4.2.1 Setting of LED head drive time

Note: When the luminous intensity marking of the replaced LED head (new part) is same as that of the used LED head (old part), do not set the LED head drive time.

- Luminous intensity marking label



- Setting of LED head drive time

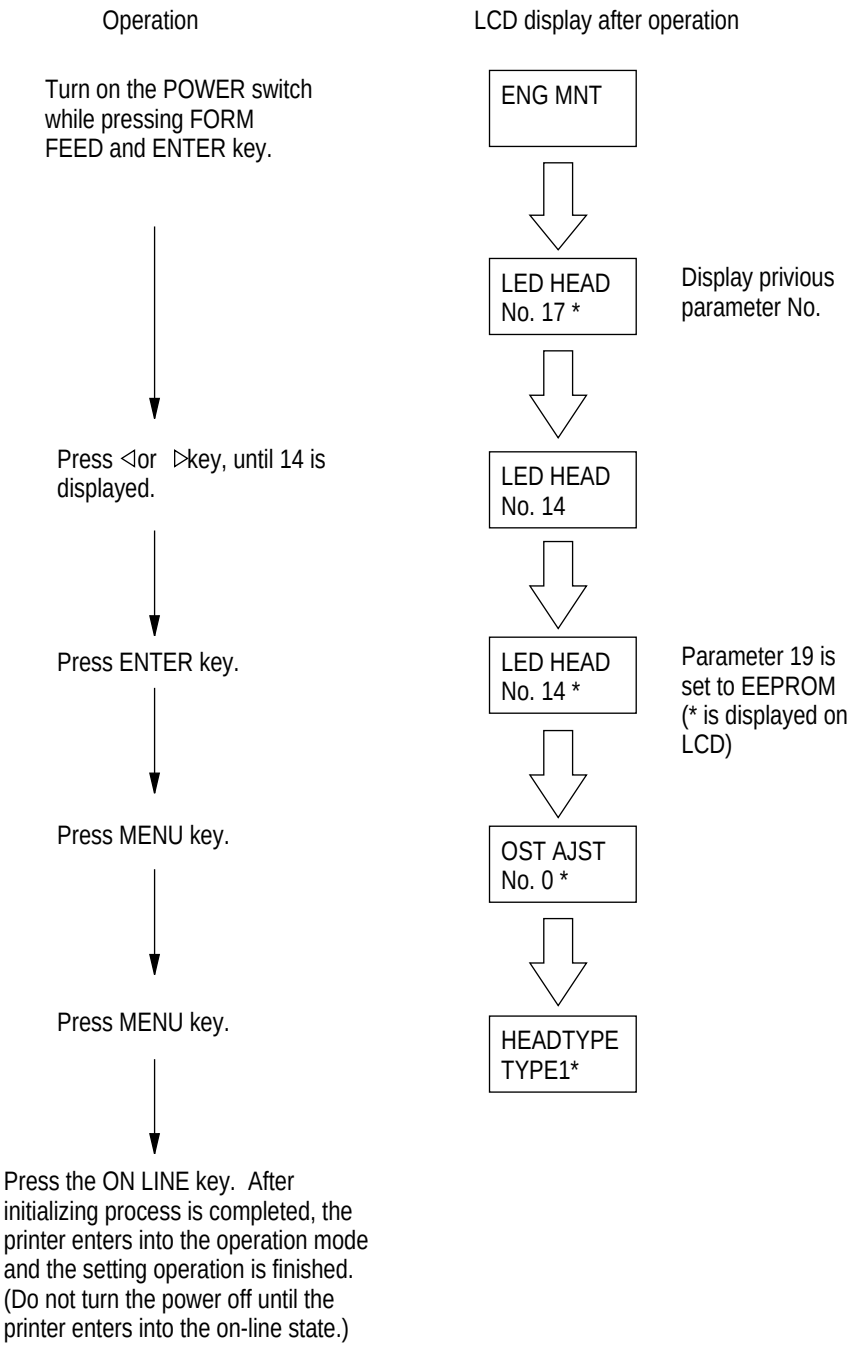
  Drive time of the LED head is to set parameter of drive time setting values corresponding to the lumious intensity displays marked on the LED head to EEPROM.

  a. Corresponding table of lumious energy display and drive time parameter

Luminous intensity display on LED head	Drive time parameter	Luminous intensity display on LED head	Drive time parameter
0.27 ~ 0.28	25	0.61 ~ 0.64	13
0.29 ~ 0.30	24	0.65 ~ 0.69	12
0.31 ~ 0.32	23	0.70 ~ 0.73	11
0.33 ~ 0.35	22	0.74 ~ 0.79	10
0.36 ~ 0.37	21	0.80 ~ 0.84	9
0.38 ~ 0.40	20	0.85 ~ 0.90	8
0.41 ~ 0.43	19	0.91 ~ 0.96	7
0.44 ~ 0.46	18	0.97 ~ 1.03	6
0.47 ~ 0.49	17	1.04 ~ 1.10	5
0.50 ~ 0.52	16	1.11 ~ 1.18	4
0.53 ~ 0.57	15	1.19 ~ 1.26	3
0.58 ~ 0.60	14	1.27 ~ 1.35	2

b. Setting

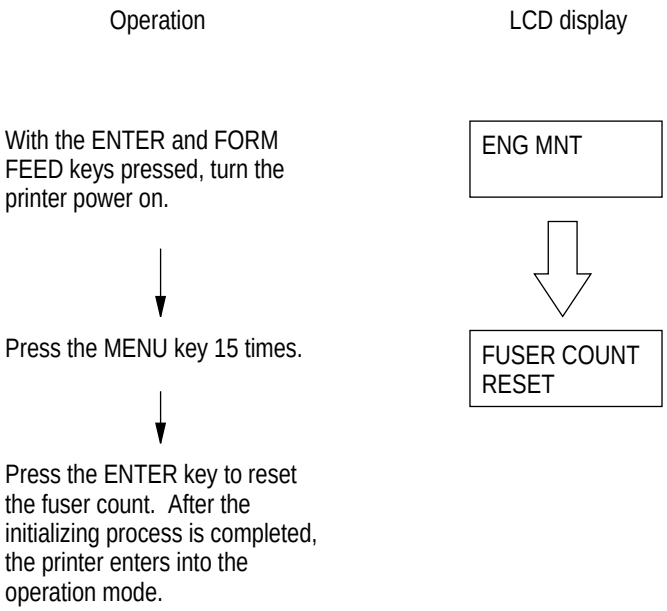
Example: Setting method the parameter to 14 (in case of privous parameter is 17).


Operation
LCD display after operation
Turn on the POWER switch while pressing FORM FEED and ENTER key.
ENG MNT
LED HEAD No. 17 *
Display privious parameter No.
Press ◁or ▷key, until 14 is displayed.
LED HEAD No. 14
Press ENTER key.
LED HEAD No. 14 *
Parameter 19 is set to EEPROM (* is displayed on LCD)
Press MENU key.
OST AJST No. 0 *
Press MENU key.
HEADTYPE TYPE1*
Press the ON LINE key. After initializing process is completed, the printer enters into the operation mode and the setting operation is finished. (Do not turn the power off until the printer enters into the on-line state.)

4.2.2 Resetting the fuser counter

(1) The fuser counter can be reset in the engine maintenance mode.

(2) Resetting method


Operation
LCD display
With the ENTER and FORM FEED keys pressed, turn the printer power on.
ENG MNT
Press the MENU key 15 times.
FUSER COUNT RESET
Press the ENTER key to reset the fuser count. After the initializing process is completed, the printer enters into the operation mode.

4.2.3 Destination setting

The desired destination can be set by turning the power on while depressing two keys corresponding to the destination according to the following table.

Destination	Keys to be depressed
ODA	MENU, ⊳
OEL	MENU, ⊲
OKI-INT-A (Australia, etc.)	MENU, PAPER SIZE
OKI-INT-L (Singapore, etc.)	MENU, TRAY TYPE
Olivetti	MENU, ENTER

This function shall not be open for users.

5. PERIODIC MAINTENANCE

5. PERIODIC MAINTENANCE

5.1 Periodic Replacing Part

As specified below, the parts shall be replaced periodically.

Part name	Condition for replacement	Cleaning	Remarks
• Toner cartridge	5,000	• LED head.	Consumables
• Image drum cartridge	30,000	• LED head.	Consumables

5.2 Cleaning

Remove any toner and dust. Clean inside and around the printer with a piece of cloth when necessary. Use the handy cleaner (VACCUM) for cleaning the printers interior.

Note: Do not touch image drum, LED lens array, and LED head connector block.

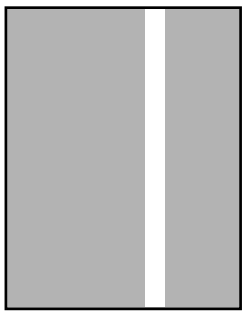
5.2.1 Cleaning of LED lens array

Clean the LED lens array or replace the toner cartridge when white lines or stripes (void, light printing) are generated vertically down the page.

Note: The LED lens array must be cleaned with an LED head cleaner.

White lines or stripes

(void, light printing)



6. TROUBLESHOOTING PROCEDURES

6. TROUBLESHOOTING PROCEDURES

6.1 Troubleshooting Tips

(1) Check the basic check points covered in the user's manual.

(2) Gather as much information on the problem from the customer as possible.

(3) Perform inspections in conditions close to those in which the problem had occurred.

6.2 Points to Check before Correcting Image Problems

(1) Is the printer being run in proper ambient conditions?

(2) Have the supplies (toner) and the routine replacement part (image drum cartridge) been replaced properly?

(3) Is the paper normal? See paper specifications section.

(4) Has the image drum cartridge been loaded properly?

6.3 Tips for Correcting Image Problems

(1) Do not touch, or bring foreign matter into contact with the surface of the image drum.

(2) Do not expose the image drum to direct sunlight.

(3) Keep hands off the fuser unit as it is heated during operation.

(4) Do not expose the image drum to light for longer than 5 minutes at room temperature.

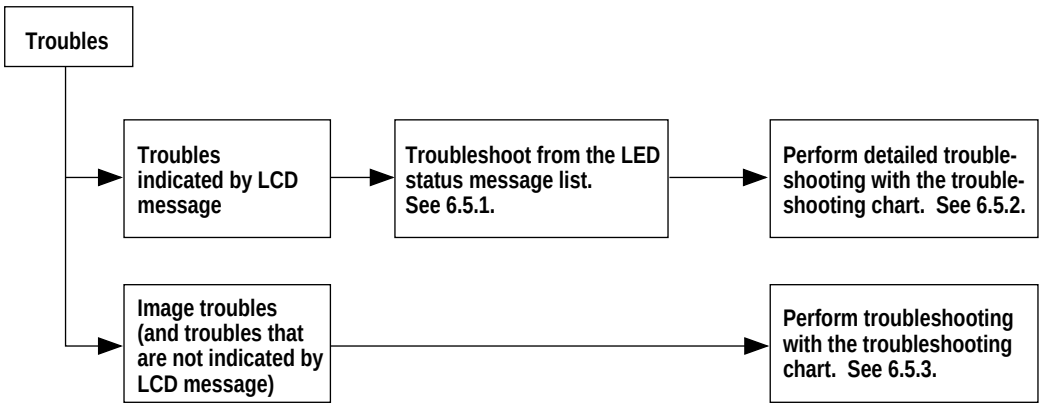
6.4 Preparation for Troubleshooting

(1) Operator panel display

The failure status of this printer is displayed on the liquid crystal display (LCD) in the operator panel. Take proper corrective action as directed by messages that are displayed on the LCD.

6.5 Troubleshooting Flow

If troubles should develop in this printer, troubleshoot in the following procedure flow:


Troubles
Troubles indicated by LCD message
Troubleshoot from the LED status message list. See 6.5.1.
Perform detailed trouble-shooting with the trouble-shooting chart. See 6.5.2.
Image troubles (and troubles that are not indicated by LCD message)
Perform troubleshooting with the troubleshooting chart. See 6.5.3.

6.5.1 LCD status message/trouble list

Table 6-1 lists the status and troubles that may be indicated by messages on the LCD.

LED status

: OFF : BLINK
: ON : Undefined

Category	LCD status message	Trouble or status	Remedy
Daily status	ON-LINE .xxx tttttt READY MANFEED ATTENTION DATA	The printer is in the on-line mode. xxx: Emulation in use (HP4, PS, HEX, AUT,PPR,FX) tttttt: Tray being selected (TRAY 1, TRAY 2, FRONT, MANUAL, FEEDER) mmmmmmmmm: Paper size in the tray being selected (LETTER, EXECUTIVE, LEGAL 14, LEGAL 13,A4 SIZE, A5 SIZE, A6 SIZE, B5 SIZE, COM-10,MONARCH, COM-9, DL ENV, C5 ENV, C4 ENV)	Normal operation
	OFF-LINE .xxx tttttt READY MANFEED ATTENTION DATA	The printer is in the off-line mode.	
	DATA PRESENT.xxx READY MANFEED ATTENTION DATA	The data remains unprinted in the buffer. Data On: The printer is in the on-line mode. Data Flash: The printer is receiving the data or performing the output processing.	In the off-line mode, the data is printed by pressing the FORM FEED button.
	PRINTING READY MANFEED ATTENTION DATA	The printer is printing.	Normal operation
	POWER SAVING READY MANFEED ATTENTION DATA	It enters in this mode when printer idle status duration exceeds the value set by the menu.	

Category	LCD status message	Trouble or status	Remedy
Daily status	TONER LOW READY MANFEED ATTENTION DATA	Toner is running out This message is displayed in combination with other message indicated in the first line. Normal operation such as stop/ continuation of printing can be continued. If “LOW TONER = OFF” is selected in the menu, the LED “ATTENTION” flashes.	– Replace the toner cartridge.
	TONER SENSOR READY MANFEED ATTENTION DATA	A fault occurred in the toner sensor. Normal operation can be continued.	– Check the operation of the toner sensor lever. – Replace the Power-Sensor board. – Replace the Main board (BOARD-COM) ***Note:*** When replacing the Main board, install the EEPROM mounted on the replaced Main board.
	RESET READY MANFEED ATTENTION DATA	The data that remains unprinted in the buffer is deleted and the printer is initialized to the user default settings. The temporary DLL, Macro, and User pattern are deleted.	Normal operation
	PRINT FONTS READY MANFEED ATTENTION DATA	All fonts of the printer are being printed. Ready ON: Executed by command entry. Ready flashing: Executed by key operation.	
	PRINT DEMO PAGE READY MANFEED ATTENTION DATA	The demo page is being printed. Ready ON: Executed by command entry. Ready flashing: Executed by key	
	PRINT MENU READY MANFEED ATTENTION DATA	The current menu setting is being printed. Ready ON: Executed by command entry Ready flashing: Executed by key operation	

Category	LCD status message	Trouble or status	Remedy
Daily status	CHANGE DRUM READY MANFEED ATTENTION DATA	The drum is running down. This message is displayed in combination with other message indicated on the first line. Normal operation can be continued.	– Replace the image drum cartridge. ***Note:*** After replacing the drum cartridge, reset the drum counter. (Refer to the User's Manual.)
	FUSER LIFE READY MANFEED ATTENTION DATA	The fuser is running down. This message is displayed in combination with other message indicated on the first line. Normal operation can be continued.	– Replace the fuse unit. ***Note:*** After replacing the fuser unit reset the fuser counter. (Refer to chapter 4.2.2.)
	COPY nnn/mmm READY MANFEED ATTENTION DATA	When the number of copies being printed is two or more, the number of copies being printed is displayed.	Normal operation
	STACKER FULL REMOVE THE PAPER READY MANFEED ATTENTION DATA	The face-down stacker is full of paper.	– Remove paper from the stacker. – Repair the broker stacker sensor cable – Repeat the insertion and removal of the connector. – Clean or replace the stacker full sensor.
	mmmmmmmmm MANUAL YYYYYYYY REQUEST READY MANFEED ATTENTION DATA	Manual loading of paper indicated by the first line message is requested. YYYYYYYY. Tray being selected (PAPER, ENVELOPE)	Load the requested paper in the feeder and press the Form Feed button.
	PS NOT AVAILABLE READY MANFEED ATTENTION DATA	It indicates that the PostScript, a printer language which is not incorporated in the printer is stipulated by PJL command. (Warning) It may be cleared by depression of the RECOVER key when CLEARABLE WRNINGS=ON is selected in the MENU.	
	EJECTING READY MANFEED ATTENTION DATA	The printer is ejecting a paper.	

Category	LCD status message	Trouble or status	Remedy
Daily status	DRUM CLEANING MANUAL XXXXX R.. READY / MANFEED / ATTENTION / DATA	It indicates that it is performing drum cleaning. The second line shows either of messages: "MANUAL LETTER REQUEST" or "MANUAL A4 SIZE REQUEST".	
	FRONT TRAY ERROR PRESS RECOVERKEY READY / MANFEED / ATTENTION / DATA	It indicates that a home position error of the front tray has occurred. The front tray becomes invalid when the RECOVER key is depressed. Other trays remain effective.	
	TONER EMPTY READY / MANFEED / ATTENTION / DATA	Indicates depletion of the toner. Volume of remaining toner is much less than that of the TONER LOW alarm level. Even though it may resume temporarily by the cover open/close operation, the toner cartridge shall be replaced.	
Paper request	mmmmmmmmm ttttttt PAPER REQUEST READY / MANFEED / ATTENTION / DATA	Loading of paper indicated by the first line message is requested.	– Load the requested paper in the tray.
Tray paper out	PAPER OUT mmmmmmmm ttttttt READY / MANFEED / ATTENTION / DATA	Either there is no paper tray or the tray has run out of paper. ttttt: Tray being selected (TRAY1, TRAY2, FRONT, MANUAL, FEEDER)	– Load a paper or a paper cassette to the tray.
	CANNOT USE A6 PAPER ON TRAY2 READY / MANFEED / ATTENTION / DATA	Indicates that A6 size paper can not be used with the second paper tray. A6 size paper shall be used with the first paper tray or with the front feeder.	
	TRAY1 INSTALL READY / MANFEED / ATTENTION / DATA	Indicates that the first paper tray which is a part of paper path for paper in the second tray is extracted. Install the first paper tray.	

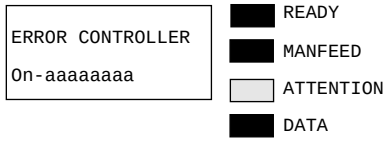
Category	LCD status message	Trouble or status	Remedy
Buffer overflow	ERROR MEMORY OVERFLOW READY MANFEED ATTENTION DATA	The memory was overflowed due to the following causes. - Data to be printed in one page is too much. - Macro data is too much - DLL data is too much.	– Press the RECOVER key on the operator panel to release the error display. – Install an expansion optional RAM or reduce the amount of print data.
	ERROR RECEIVE BUFFER OVERFLOW READY MANFEED ATTENTION DATA	The receive buffer was overflowed	– Press the RECOVER key on the operator panel to release the error display. – Chang the setting of the host side so that the host can detect the busy state of the printer. Resend the data from the host side to the printer.
	ERROR PRINT OVERRUN READY MANFEED ATTENTION DATA	The printer overrun.	– Press the RECOVER key on the operator panel to release the error display. – Simplify page data fomatting, or add memory then select “Page Protection” from menu.
Interface error	OKI HSP I/F CARD RESETTING READY MANFEED ATTENTION DATA	Indicates that OKI HSP I/F card is being reset. It automatically restores upon completion of resetting.	
	ERROR HOST I/F OKI HSP XX READY MANFEED ATTENTION DATA	Indicates that an error (critical failure) occurred with OKI HSI I/F. Continues the operation when RECOVER key is pressed. XX : 10 I/F time out 20 Other errors	

Category	LCD status message	Trouble or status	Remedy
Paper size error	ERROR PAPER SIZE CHECK tttttt READY MANFEED ATTENTION DATA	Paper of improper size was fed from the tray. tttttt: MANUAL, TRAY 1, TRAY 2, FRONT, FEEDER	– Check the paper in the tray or check to see if more than one sheet of copy were fed simultaneously. – Open the cover, then close it to perform recovery printing and the error display is released. – If this error occurs frequently, see chapter 6.5.2.
	PAPER INPUT JAM CHECK tttttt READY MANFEED ATTENTION DATA	A jam occurred during paper feeding from the tray. tttttt: MANUAL, TRAY 1, TRAY 2, FRONT, FEEDER	– Check the paper in the cassette. Open the cover, then close it to perform recovery printg and the error display is released. – If this error occurs frequently, see chapter 6.5.2.
Jam errors	PAPER FEED JAM CHECK tttttt READY MANFEED ATTENTION DATA	A jam occurred during paper traveling the printer. tttttt: MANUAL, TRAY 1, TRAY 2, FRONT, FEEDER	– Open the cover, remover the paper, then close the cover. When the cover is closed, recovery printing is performed and the error display is released. – If this error occurs frequently, see chapter 6.5.2.
	PAPER EXIT JAM REMOVE THE PAPER READY MANFEED ATTENTION DATA	A jam occurred during paper discharge.	– Open the cover, remover the paper, then close the cover. When the cover is closed, recovery printing is performed and the error display is released. – If this error occurs frequently, see chapter 6.5.2.
Daily status	menu READY MANFEED ATTENTION DATA	Menu operation	Normal operation in menu mode.
	COVER OPEN READY MANFEED ATTENTION DATA	The upper cover was opened.	– Close the cover to release the error display. – If the display does not change after the cover is closed, check for correct operation of cover open/ switch and lever. – Replace the Power/Sensor board.

<table>
<tr><th>Category</th><th>LCD status message</th><th>Trouble or status</th><th>Remedy</th></tr>
<tr><td>Controller error</td><td>EEPROM
RESETTING
READY
MANFEED
ATTENTION
DATA</td><td>An error was detected by EEPROM ID No. check.</td><td>– It displays the message for a few seconds. It reset the EEPROM to the factory default state to continue operation.</td></tr>
<tr><td rowspan="4">Controller error</td><td rowspan="4">ERROR CONTROLLER
nn
READY
MANFEED
ATTENTION
DATA</td><td>A fault occurred in the printer.
Turn the power off, then on to release the error display. If the error display cannot be released by this procedure, call a service person.</td><td>* When the program ROM is updated and the EEPROM is replaced with new one, the menu factory default corresponding to each destination will be loaded</td></tr>
<tr><td><table><tr><th>Code (nn)</th><th>Error</th></tr><tr><td>10</td><td>An error was detected by program hash check.</td></tr><tr><td>20</td><td>An error was detected by font format check.</td></tr></table></td><td>– Replace the program ROM.
(Location: BOARD-COM:Q18,Q19)*
– Replace the Main board (AOLM-PCB or BOLM-PCB).
Note: When replacing the Main board, install the EEPROM mounted on the replaced Main board.
– Replace the font ROM.
(Location: BOARD-COM:Q18,Q19)*
– Replace the Main board (AOLM-PCB or BOLM-PCB).
Note: When replacing the Main board, install the EEPROM mounted on the replaced Main board.</td></tr>
<tr><td></td><td></td></tr>
</table>

Category	LCD status message	Trouble or status		Remedy
Controller error		Code (nn)	Error	Remedy
		30	An error was detected by resident RAM check.	– Replace the Main board (BOARD-COM). ***Note:*** When replacing the Main board, install the EEPROM mounted on the replaced Main board.
		40	An error was detected by EEPROM check.	– Replace the EEPROM. (Location: Q12)* – Replace the Main board (BOARD-COM).
		50	An error was detected by optional software ROM.	– Check the optical software ROM for proper connection. – Replace the optional software ROM. (Location: BOARD-PSBA: 02C, 02D) – Replace the PostScript board (BOARD-PSBA)
		60	An error was detected by optional RAM check.	– Check the optional RAM for proper connection. – Replace the optional RAM.
		70	A fault occurred in the fan motor.	– Connect the fan motor cable properly. – Replace the fan motor. – Replace the Power/Sensor board.
		71	A fault occurred in the fuser.	See chapter 6.5.2.
		72	Thermistor open error	
		73	Thermistor short error	
		74	SSIO error	See chapter 6.5.2.
		80	I/F timeout occurred between the printer main unit and the operator panel.	See chapter 6.5.2.
		81	I/F timeout occurred between the printer main unit and the optional tray (2nd tray, envelope feeder, etc.)	See chapter 6.5.2.

Category	LCD status message	Trouble or status		Remedy
Controller error		Code (nn)	Error	Remedy
		90	A watchdog timer timeout occurred.	– Turn the power off, then on. – Replace the Main board. (BOARD-COM) ***Note:*** When replacing the Main board, install the EEPROM mounted on the replaced Main board
		F0	Monitor error (double weight)	
		F1	Monitor error (argument error)	
		F2	Optional timeout error	
		F3	Optional status error	
		F4	BG program error	
		F5	System timer program error	
		F6	IPT2 program error	

<table>
<tr><th>Category</th><th>LCD status message</th><th colspan="2">Trouble or status</th><th>Remedy</th></tr>
<tr><td>Proccesor error</td><td> 
</td><td colspan="2">An error occurred in the controller.
n = (*1) Exception Code aaaaaaaa = Error address

*1:<table><tr><th>Exception code</th><th>Error</th></tr><tr><td>1~3
D~F</td><td>Reserved</td></tr><tr><td>4</td><td>Address Error Exception
(Lead instruction, instruction fetch)</td></tr><tr><td>5</td><td>Address Error Exception (Store instruction)</td></tr><tr><td>6</td><td>Bus Error Exception (Instruction Fetch)</td></tr><tr><td>7</td><td>Bus Error Exception
(Load instruction, store instruction)</td></tr><tr><td>8</td><td>System Call Exception</td></tr><tr><td>9</td><td>Breakpoint Exception</td></tr><tr><td>A</td><td>Reserved Instruction Exception</td></tr><tr><td>B</td><td>Coprocessor Unusable Exception</td></tr><tr><td>C</td><td>Arithmetic Overflow Exception</td></tr><tr><td></td><td></td></tr></table></td><td>– Turn the power off, then on.
– Replace the Main board. (BOARD-COM)
Note: When replacing the Main board, install the EEPROM mounted on the replaced Main board.</td></tr>
</table>

6.5.2 LCD message troubleshooting

If troubles are not correctable from the LCD message trouble list, follow the troubleshooting flowcharts given here to deal with them.

No.	Trouble	Flowchart number
1.	The printer does not work normally after being turned on.	①
2.	Jam error ├ Paper input jam (1st Tray) ├ Paper input jam (Front feeder) ├ Paper feed jam └ Paper exit jam	 ②-1 ②-2 ②-3 ②-4
3.	Paper size error	③
4.	Fusing unit error	④
5.	SSIO (Synchronous Serial I/O) error (between the Main board and the Power/sensor board)	⑩
6.	I/F time-out between the printer and the operator panel	⑥
7.	I/F time-out (no response) between the printer and an optional tray (High Capacity Second Paper Feeder, Power envelope feeder)	⑤
8.	Messages cannot be received through the parallel interface.	⑦
9.	Messages cannot be received through the serial interface.	⑧
10.	Data cannot be received through the OKI HSP interface.	⑨

Note: When replacing the Main board, install the EEPROM from the old Main board, onto the new Main board.

① The printer does not work normally after being turned on.

- Is 8888888888888888 / 8888888888888888 message shown in the LCD display (for less than 1 second)?
  - No — Is the AC cable connected properly?
    - No — Connect the cable properly.
  - No — Is the message (16 columns ■ display only on the top row) shown in the LCD display?
    - Yes — Replace the Main board.
  - No — Are the following voltages applied to the corresponding pins of the POWER connector on the Main board? (For the measuring points, see Fig. 6-1.)

    Pin 15: –8V, Pin 16: +8V, Pins 19, 20: +30V
    Pins 21, 22, 26-29: 0V, Pins 23-25: +5V

    - No — Remove the AC cable. Set the POW switch to the ON position. Measure the resistance between L and N pins of the AC inlet using a multimeter. Is there continuity between L and N pins (normal resistance: 554 kΩ)? (For measuring points, see Fig. 6-2.)
      - No — Replace the fuse F1 or the Power/sensor board
    - Yes — Are POWER connector of the Main board and CN9 connector on the Driver board connected properly? Are CN8 connector on the Driver board and CN3 connector of the Power/sensor board connected properly?
      - No — Connect the connectors properly.
    - Yes — Are the following voltages applied to CN3 connector of the Power/sensor board? (For measuring points, see Fig. 6-3.)

      Pins 16, 17: +30V, Pins 8-10, 14, 15: 0V
      Pin 20: –8V, Pins 11-13: +5V, Pin 21V: +8V

      - No — Replace the Power/sensor board.
    - Yes — Replace the Driver board.
    - Is the printer recovered?
      - No — Replace the Main board
    - YES — END.

①-1

①-2

From ①–2 on the preceding page

①-1

Yes Is the operator panel connected to the Main board properly?

- No Connect the operator panel properly.

Yes Is the connecting cord defective?

- Yes Replace the connecting cord.

No Replace the operator panel assembly.

Is the printer recovered?

- No Replace the Main board.

YES END.

Yes Is INITIALIZING message shown in the LCD display?

- No Replace the Control board.

YES ONLINE XXX
XXXX XXXX message shown in the LCD display?

- No Take the proper action following the message shown in the LCD display.
  (For details, see the chapter 6.5.1 LCD STATUS message/trouble list.)

YES END.

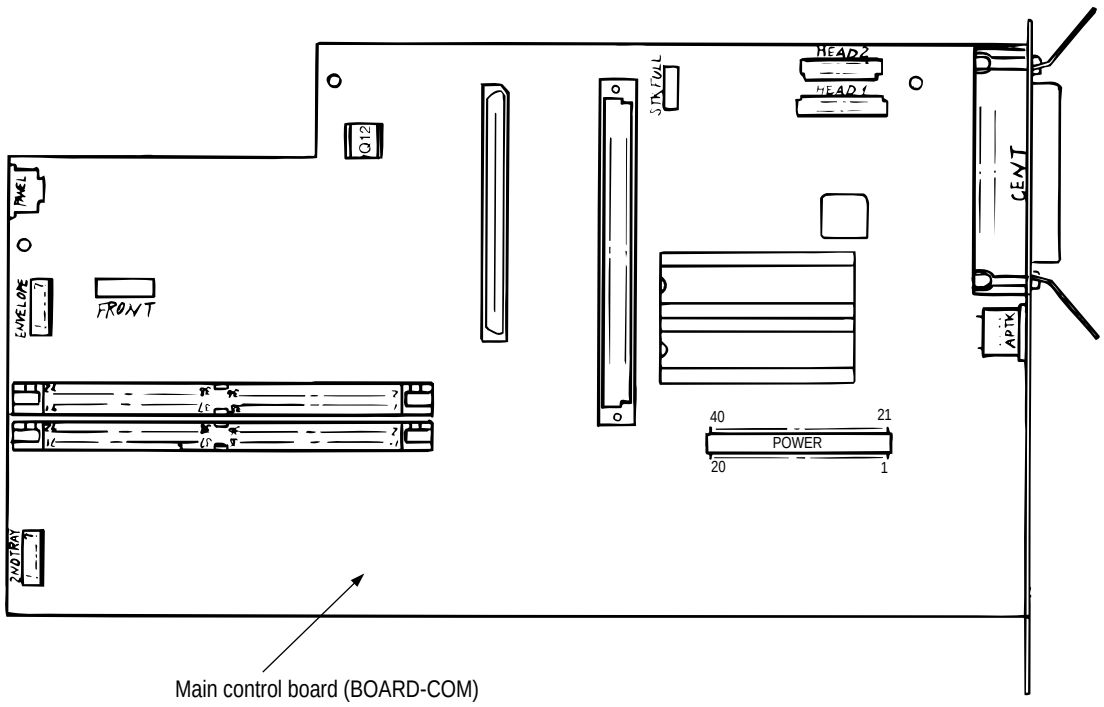


Fig. 6-1 Connector and Pin Location

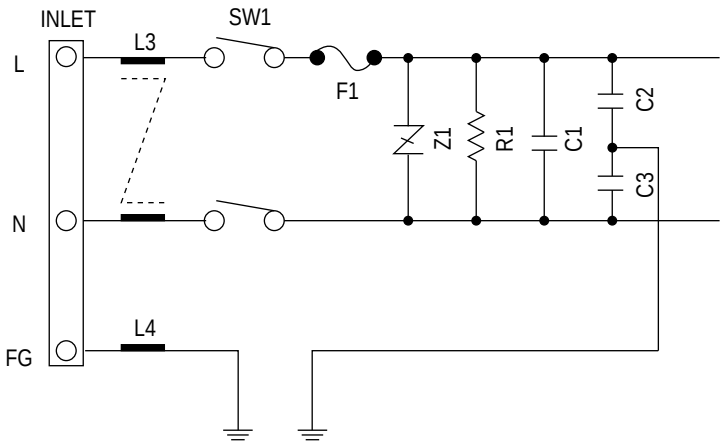


Fig. 6-2 Measurement by a Multimeter

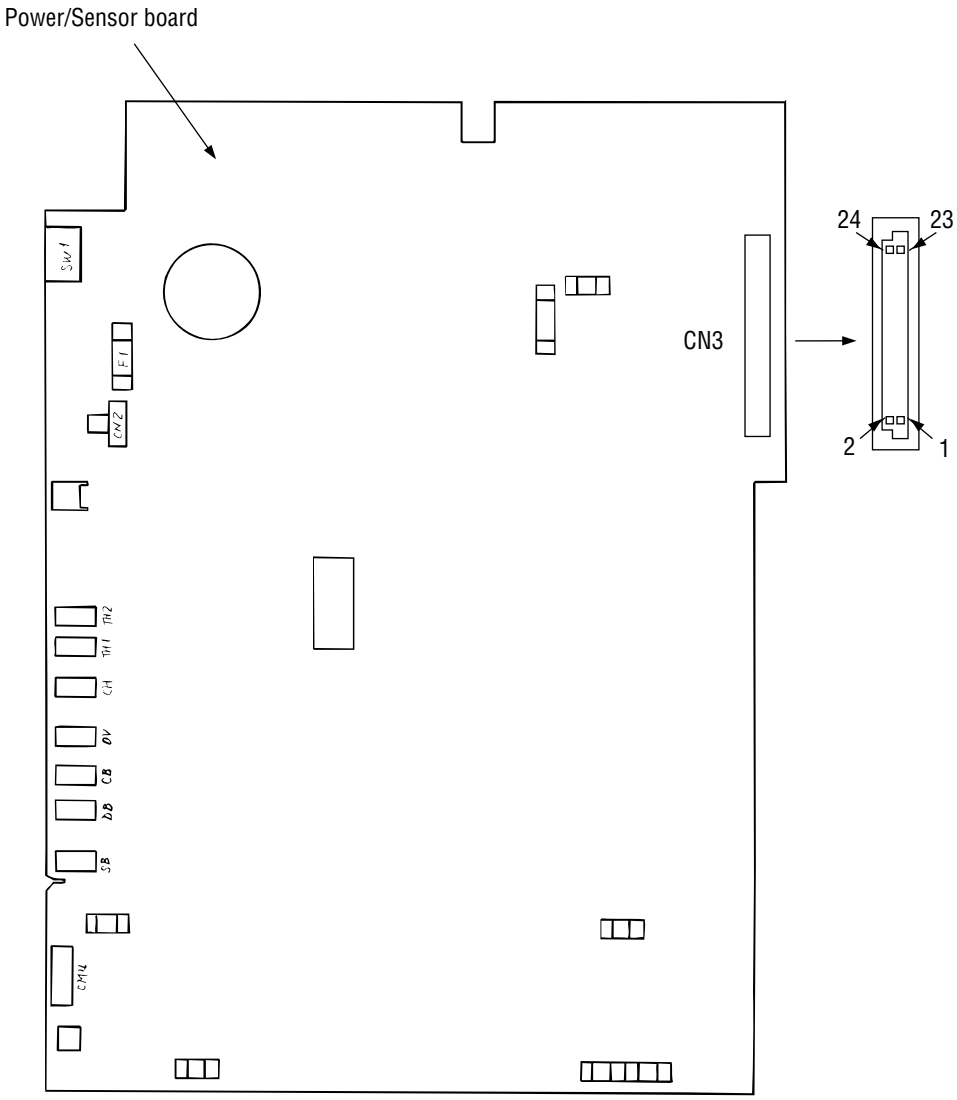


Fig. 6-3 Connector and Pin Location

[JAM error]

②-1 Paper input jam (1st tray)

- Does a jam error occur when the power is turned on?
  - Yes Is the paper at the inlet sensor lever?
    - Yes Remove the paper.
  - No Does the inlet sensor lever operate smoothly?
    - No Replace the inlet sensor lever
  - Yes Clean the inlet sensor on the Power/sensor board or replace the Power/sensor board. (See Fig. 2.3 Sensor Layout Diagram.)
- No Does jam error occur after paper feeding?
  - Yes Is the paper fed on the inlet sensor lever?
    - Yes Does the inlet sensor lever operate smoothly?
      - No Replace the inlet sensor lever.
    - Yes Clean the inlet sensor on the Power/sensor board or replace the Power/sensor board.
      (See Fig. 2.3 Sensor Layout Diagram.)
  - No Replace the hopping roller assembly or paper cassette assembly.
- No Is the hopping roller rotating?
  - Yes Set the paper cassette properly.
- No Is the hopping motor rotating?
  - Yes Replace the hopping roller gear (one way) or idle gear (HF)

Ⓐ

- No Are the cable and connector between the hopping motor and the Main board connected properly? (see chapter 7.1.)
  - No Connect each connector properly or replace the nylon connector cord (white: 9 pins).
- Yes Is the coil resistance (normal resistance: about 6.7 Ω) of the hopping motor normal?
  - No Replace the hopping motor.
- Yes Replace the Main board.

②-2 Paper input jam (front feeder)

- Does jam error occur when the power is turned on?
  - Yes Is the paper at the inlet sensor lever?
    - • Yes Remove the paper.
  - (A) No Does the inlet sensor lever operate smoothly?
    - • No Replace the inlet sensor lever.
  - Yes Clean the inlet sensor on the Power/sensor board or replace the Power/sensor board. (See Fig. 2-3 Sensor Layout Diagram.)
- No Does a jam error occur after paper feeding?
  - Yes Is the paper fed on the inlet sensor lever?
    - • Yes Go to Ⓐ.
  - No Go to Ⓑ.
- No Does the front feeder paper sensor lever operate smoothly?
  - • No Replace the lever of the front feeder paper sensor.
- Yes Clean the front feeder paper sensor.
- Is the printer recovered?
  - • YES END.
- No Replace the front feeder paper sensor assembly.
- (B) No Is the hopping roller rotating?
  - • Yes Set the paper properly.
- No Is the hopping motor rotating?
  - • Yes Replace the front feeder gear or idle gear.

② -1- Ⓐ

②-3 Paper feed jam

- Does a paper feed jam occur when the power is turned on?
  - Yes Is the paper on the paper sensor lever?
    - Yes Remove the paper.
  - No Does the paper sensor lever operate smoothly?
    - No Replace the paper sensor lever.
  - Yes Clean the paper sensor. (See Fig. 2-3 Sensor Layout Diagram.)
  - Is the printer recovered?
    - No Replace the Power/sensor board.
  - YES END.
- No Has the paper reached the paper sensor lever?
  - No Is the registration motor rotating?
    - No Is there any defective gear in the motor bracket assembly.
      - Yes Replace the defective gear.
    - No Are the connections for CN3 connector on the Power/sensor board, between CN8 and CN7 connectors on the Control board and registration motor, and for POWER connector and FRONT connector (white 9-pin or 7-pin connector) made properly.
      - No Connect these connectors properly. If a defective cable is found, replace the defective cable.
    - Yes Is the coil resistance (normal resistance: 6.7 Ω) of the registration motor normal?
      - No Replace the registration motor
    - Yes Replace the Driver board.
    - Is the printer recovered?
      - No Replace the Main board.
    - YES END.
  - Go to on the next page Ⓐ.
- Go to on the next page Ⓑ.

From on the preceding page Ⓑ.

From on the preceding page Ⓐ.

Yes Is the image drum set properly?

- No Set the image drum properly.

Yes In case of paper feed from the front feeder, check the hopping roller of the front feeder assembly. In case of paper feed from the tray, check the hopping roller assembly and the tray.

Yes Has the paper reached the outlet sensor lever?

Yes Does the outlet sensor lever operate smoothly?

- No Replace the outlet sensor lever.

Yes Clean the outlet sensor on the Power/sensor board. (See Fig. 2-3 Sensor Layout Diagram.)

Is the printer recovered?

- No Replace the Power/sensor board.

YES END.

No Is the drum motor rotating?

No Is there any defective gear in the motor bracket assembly?

- Yes Replace the defective gear.

No Are the connections for CN3 connector on the Power/sensor board between CN8 and CN6 connectors and drum motor, and for POWER connector and FRONT connector (white 9-pin or 7-pin connector) on the Control board made properly?

- No Connect these connectors properly.

Yes Is the coil resistance (normal resistance between pins 1 and 2, between pins 3 and 4 : 4.3 Ω) of the drum motor normal?

- No Replace the drum motor.

Yes Replace the driver board.

Is the printer recovered?

- No Replace the Main board.

YES END.

Go to on the next page Ⓐ.

From on the preceding page Ⓐ.

Yes Is the transfer roller rotating smoothly?

- No Is there any defective gear of the transfer roller?
  - Yes Replace the defective gear.
- No Replace the transfer roller.

Yes Is the fuser unit installed properly?

- No Install the fuser unit properly.

Yes Is the image drum cartridge set properly?

- No Set the image drum cartridge properly.

Yes Does the paper sensor lever operate smoothly?

- No Replace the paper sensor lever.

Yes Clean the paper sensor on the Power/sensor board.
(See Fig. 2-3 Sensor Layout Diagram.)

Is the printer recovered?

- No Replace the Power/sensor board.

YES END.

②-4 Paper exit jam

- Does a paper exit jam error occur when the power is turned on?
  - YES Is the paper on the outlet sensor lever?
    - Yes Remove the paper
  - No Does the outlet sensor lever operate smoothly?
    - No Replace the outlet sensor lever.
  - Yes Clean the outlet sensor on the Power/sensor board.
    (See Fig. 2-3 Sensor Layout Diagram.)
  - Is the printer recovered?
    - No Replace the Power/sensor board.
  - YES END.
- No Is the face-up stacker drawn out or pushed into the printer completely?
  - No Draw the face-up stacker out the printer completely or push it into the printer completely.
- Yes Is the eject roller assembly installed properly?
  - No Install the eject roller assembly properly.
- Yes Replace the eject roller assembly.

③ Paper size error

- Is paper of the specified size used?
  - No Use paper of the specified size.

Yes Do the inlet sensor lever and paper width sensor lever operate smoothly?

- No Replace the inlet sensor lever or paper width sensor lever.

Is the printer recovered?

- No Clean the inlet sensor or paper width sensor on the Power/sensor board. (See Fig. 2-3 Sensor Layout Diagram.)

Is the printer recovered?

- No Replace the Power/sensor board.

YES END.

YES END.

YES Does the outlet sensor lever operate smoothly.

- No Replace the outlet sensor lever.

Is the printer recovered?

- No Clean the outlet sensor on the Power/sensor board. (See Fig. 2-3 Sensor Layout Diagram.)

Is the printer recovered?

- No Replace the Power/sensor board.

YES END.

YES END.

Yes Clean the inlet sensor, paper width sensor, and outlet sensor. (See Fig. 2-3 Sensor Layout Diagram.)

Is the printer recovered?.

- No Replace the Power/sensor board.

YES END.

④ Fuser unit error (ERROR 71), (ERROR 72), (ERROR 73)

- Turn the power OFF/ON.
- Does a fuser unit error occur immediately?
  - Yes Is the thermistor open or shorted?
    Measure the resistance between thermistor contacts.
    (About 220 kΩ at room temperature, 25°C)
    (See chapter 7.3 for the measuring points.)
    - Yes Replace the fuser unit.
    - No Ⓐ
  - No Does the thermistor contact touch the contact assembly properly when the fuser unit is mounted in the printer? (See Fig. 6-5Ⓕ.)
    - No Adjust the thermistor contact so as to touch the contact assembly properly.
  - Yes Does appear the heat-on signal at pin 31 (HEAT ON signal: 0 V in heater on state) of the POWER connector on the Main board?
    - No Replace the Main board.
  - Yes Replace the Power/sensor board.
- No Does a fuser unit error occur after more than 90 seconds from the power-on?
  - No Go to Ⓐ
- Yes Turn the power OFF/ON.
- Is the heater of the fuser unit turned on? (When the heater is turned on, heat is radiated.)
  - Ⓑ
  - Yes Does the thermistor contact touch the contact assembly properly when the fuser unit is mounted in the printer? (See Fig. 6-5Ⓕ.)
    - No Adjust the thermistor contact so as to touch the contact assembly properly.

To on the next page Ⓑ.

To on the next page Ⓐ.

From on the preceding page Ⓐ.

From on the preceding page Ⓑ.

- Yes Replace the fuser unit.

Is the printer recovered?

- No Replace the Power/sensor board or Control board.

YES END.

No Is the heater or thermistor open?
Measure the resistance between the heater contacts (normal resistance: 220 kΩ (25°C) between pins 1 and 2, 2.3 Ω (120 V) and 8.5 Ω (240 V) between pins 3 and 4) (See chapter 7.3.)

- Yes Replace the fuser unit.

No Is the AC voltage applied to the CN2 connector on the Power/sensor board? (See Fig. 4.)

- No Is CN2 connector connected to the Power/sensor board?

  - No Connect the CN2 connector to the Power/sensor board properly.

Yes Is Pin 31 (HEAT ON signal) of the POWER connector of the Main board turned on? (In heater on state, this pin is set to 0 V).

- No Replace the Main board.

Yes Replace the Power/sensor board.

YES Go to Ⓑ.

⑤ I/F time-out between printer and optional tray (ERROR 81)

- Is an optional tray (2nd tray or envelope feeder) used?
  - Yes Is the connection between the Main board and the optional tray connected properly. (See chapter 7.1.)
    - No Connect the cable properly.
  - Yes Replace the Main board.
  - Is the printer recovered?
    - No Isolate the trouble by following the 2nd tray or envelope feeder maintenance manual. (See appendix C or D.)
  - YES END.
- No Replace the Main board.

⑥ I/F time-out occurs between the printer and the operator panel (ERROR 80) .

- Is the connecting cord of the operator panel connected to the PANEL connector of the Main board properly? (See chapter 7.1.)
  - No Connect the connecting cord of the operating panel to the PANEL connector of the Main board properly.
- Yes Is the connecting cord defective?
  - Yes Replace the connecting cord.
- No Replace the operator panel assembly.
- Is the printer recovered?
  - No Replace the Main board.
- YES END.

⑦ Communications with the host cannot be performed via the parallel interface.

- Is the parallel interface or auto interface selected in menu level 1?
  - No Select the parallel interface or auto interface in menu level 1.

Yes Is the host set to the bidirectional communication?

- Yes Set the parallel I/F to the bidirectional communication enable state (DISABLE → ENABLE) in menu level 2.

No Set the parallel I/F to the bidirectional communication disable state (ENABLE → DISABLE) in menu level 2.

Is the printer recovered?

- Yes END

No Is the connector of the parallel interface cable connected to the printer properly?

- No Connect the connector of the parallel interface cable to the printer properly.

Yes Is there any defect in the cable (broken or bent pin, broken wire)?

- Yes Replace the parallel interface cable.

No Replace the Main board or ask the user to check the hardware and software at the host side.

⑧ Data cannot be received through the OKI HSP interface

- Is the interface board (option) connected to the OKI HSP interface connector on the Main board properly?
  - No Connect the interface board (option) to the OKI HSP interface connector properly.

Yes Is there any broken or bent pin in the interface board (option)?

- Yes Ask the user to replace the interface board (option).

No Replace the Main board.

OK?

- No A trouble may exist in the interface board (option), interface cable or host side. Ask the user to check these items.

⑨ Synchronous serial I/O error (ERROR 74)

- Are POWER connector of the Main board and CN9 connector on the Driver board are connected properly? Are CN8 connector on the Driver board and CN3 connector of the Power/sensor board are connected properly?
  - No Connect the connectors properly.

Yes Is there +30V on 19 and 20 pins of POWER connector on the main board?

- No Replace the Power/sensor board.

Yes Replace the Main board.

Is the printer recovered?

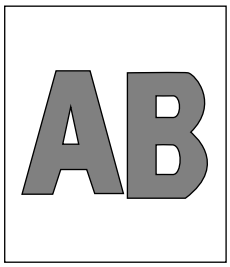
- No Replace the Power/sensor board.

Yes END

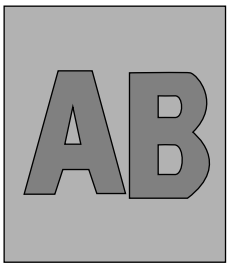
6.5.3 Image troubleshooting

Procedures for troubleshooting if abnormal images have been printed out are explained below. Figure 6-3 below shows typical abnormal images.

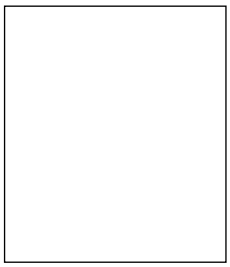
Trouble	Flowchart number
Images are light or blurred as a whole (Figure 6-4, Ⓐ)	①
Dark background density (Figure 6-4, Ⓑ)	②
Blank paper is output (Figure 6-4, Ⓒ)	③
Black stripes in the vertical direction (Figure 6-4, Ⓓ)	④
Cyclical defect (Figure 6-4, Ⓔ)	⑤
Print voids	⑥
Poor fusing (images are blurred or peeled off when touched by hands)	⑦
White streaks in the vertical direction (Figure 6-4, Ⓕ)	⑧
Snowy print of high density pattern (Figure 6-4, Ⓗ)	⑨
Blockly faded print (Figure 6-4, Ⓘ)	⑩



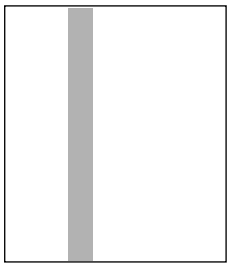
Ⓐ Light or blurred images as a whole



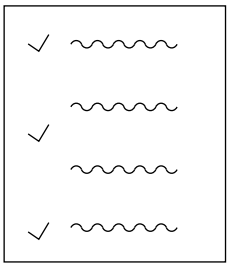
Ⓑ Dark background density



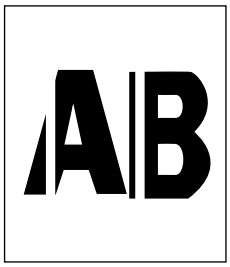
Ⓒ Blank paper



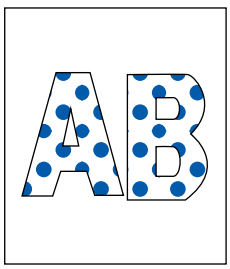
Ⓓ Black stripes in the vertical direction



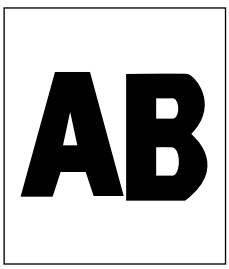
Ⓔ Cyclical defect



Ⓕ White belts or streaks in the vertical direction



Ⓗ Snowy print of high density pattern



Ⓘ Blackly faded print

Fig. 6-4 Abnormal images

① Image are light or blurred a whole.

- Is toner low? (Is the TONER LOW message displayed?)
  - Yes Supply toner.

No Is paper of the specified grade used?
  - No Use paper of the specified grade.

Yes Is the lens surface of the LED head dirty?
  - Yes Clean the lens.

No Is the LED head installed properly? (Check connector HEAD1 (14P), HEAD2 (12P) of the Main board and PC connector on the LED head for proper connection.)
  - No Install the LED head properly.

Yes Is the contact plate of the transfer roller contacted with the contact assembly of the power/sensor board properly? (See Figure 6-6.)
  - No Make the contact plate of the transfer roller contact with the power/sensor board and Shaft of the transfer roller properly.

Yes Are the contact of the developing roller and the contact of the toner supply roller of the image drum cartridge contacted with the contact assembly properly? (See Figure 6-5 Ⓐ and Ⓑ.)
  - No Adjust the contacts of the developing and toner supply roller to contact the contact assembly properly.

Yes Replace the transfer roller. (See 3.3.36.)

- Has the trouble been removed?
  - Yes End

No Replace the image drum cartridge.

- Has the trouble been removed?
  - Yes End

    Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key and reset the drum counter. (Refer to User's Manual.)

No Replace the Main board or Power/Sensor board.

② Dark background density

- Has the image drum been exposed to external light?
  - Yes Mount the image drum in the printer and wait for about 30 minutes.

No Is the heat roller of the fusing unit dirty?

- Yes Clean the heat roller.

No Is the contact of the cleaning roller of the image drum cartridge contacted with e contact assembly properly? (See Figure 6-5 Ⓒ.)

- No Adjust the contact of the cleaning roller to contact the contact assembly properly.

Yes Replace the image drum cartridge.

- Has the trouble been removed?
  - Yes End

    Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter. (Refer to User's Manual.)

No Replace the Main board Power/Sensor board.

③ Black paper is output.

- Is the LED head connected properly? (Check connector HEAD1 (14P), HEAD2 (12p) on the Main board and PC connector on the LED head.)
  - No Connect the LED head properly or replace the head cable.

Yes Is the contact of the image drum cartridge contacted with the ground contact properly. (See Figure 6-5 Ⓓ.)

- No Check the ground contact of the image drum cartridge.

Yes Check the connectors HEAD1 (14P) and HEAD2 (12P)

- No Replace the LED head.

- Yes Replace the connector
- Has the trouble been removed.
  - Yes End

    Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time. (Refer to Section 4.2.)

No Replace the Main board or Power/Sensor board.

④ Black belts or stripes in the vertical direction

- Replace the image drum cartridge.
- Has the trouble been removed?
  - Yes End

    Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter. (Refer to User's Manual)

- No Replace the LED head.
- Has the trouble been removed.
  - Yes End

    Note: After replacing the LED head, set the printer in the engine maintenance mode by burning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time.
    (Refer to Section 4.2.)

- No Replace the Main board or power/sensor board.

⑤ Cyclic error

	Frequency	Remedy
Image drum	3.71" (94.2 mm)	Replace or clean the image drum cartridge.
Developing roller	2.50" (63.5 mm)	Replace the image drum cartridge.
Toner supply roller	2.13" (54.0 mm)	Replace the image drum cartridge.
Charging roller	1.73" (43.9 mm)	Replace the image drum cartridge.
Cleaning roller	1.48" (37.6 mm)	Replace the image drum cartridge.
Transfer roller	2.30" (58.4 mm)	Replace the transfer roller.
Heat roller	3.49" (88.5 mm)	Replace the fusing unit assy.
Back-up roller	3.52" (89.5 mm)	Replace the back-up roller.

Notes:

1. After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter. (Refer to User's Manual.)

2 After replacing the fusing unit assy, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys, and reset the fuser counter. (Refer to See 4.1.)

⑥ Print voids

- Is the contact plate of the transfer roller contacted with the power/sensor board properly? (See Figure 6-5.)
  - No Adjust the contact plate contact to contact the power/sensor board properly and the shaft of the transfer roller.

Yes Replace the transfer roller. (See 3.3.36.)

- Has the trouble been removed.
  - Yes End

No Are the contacts of the toner supply roller, developing roller, image drum and charging roller contacted with the contact assy properly? (See Figure 6-5 Ⓐ, Ⓑ, Ⓒ, Ⓓ, Ⓔ.)

- No Adjust the contacts to contact the contact assy properly.

Yes Replace the image drum cartridge.

- Has the trouble been removed?
  - Yes End

Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter. (Refer to User's Manual.)

No Is the LED head installed properly? (Check connector HEAD1(14p), HEAD2 (12p) on the Main board and PC Connec- tor on the LED head.)

- No Install the LED head properly.

Yes Replace the LED head or the head cable.

- Has the trouble been removed?

Yes End

Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time. (Refer to Section 4.2.)

No Replace the Main board or power/sensor board.

⑦ Poor fusing

- Is paper of the specified grade used?
  - No Use paper of the specified grade.

Yes Is the spring of the back-up roller normal?

- No Replace the spring.

Yes Is the contact of the fusing unit assy contacted with the contact assy properly? (See Figure 6-5 Ⓖ.)

- No Adjust the contact of the fusing unit assy to contact the contact assembly properly.

Yes Replace the fusing unit assy.

- Has the trouble been removed?
  - Yes End

No Replace the Main board or power/sensor board.

⑧ White belts or streaks in the vertical direction

- Are the LED lens dirty?
  - Yes Clean the LED lens.

No Is the contact plate of the transfer roller contacted with the power/sensor board properly? (See Figure 6-6.)

- No Make the contact plate contact with the power/sensor board properly.

Yes Replace the transfer roller. (See 3.3.36.)

- Has the trouble been removed?
  - Yes End

No Is the LED head installed properly? (Cleck CN4 connector HEAD1 (14p), HEAD2 (12p) on the Main board and PC connector on the LED head.)

- No Install the LED head properly.

Yes Replace the LED head.

- Has the trouble been removed?
  - Yes End

    Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time. (Refer to Section 4.2.)

Yes Replace the image drum cartridge.

- Has the trouble been removed?
  - Yes End

    Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key. Reset the drum counter. (Refer to User's Manual.)

No Replace the Main board or power/sensor board.

⑨ Snowy print of high density pattern

- Is toner low?
  - Yes Supply toner.

No Is paper of the specified grade used?

- No Use paper of the specified grade.

Yes Is the lens of the LED head dirty?

- Yes Clear the lens.

No Is the LED head installed properly?

- No Install the head properly.

Yes Increase the printer setting number (±0 fi +1) (Refer to User's manual.)

⑩ Blockly faded print

- Is toner low?
  - Yes Supply toner.

No Is paper of the specified grade used?

- No Use paper of the specified grade.

Yes Is the lens of the LED head dirty?

- Yes Clear the lens.

No Is the LED head installed properly?

- No Install the head properly.

Yes Decrease the printer setting number (±0 fi +1) (Refer to User's manual.)

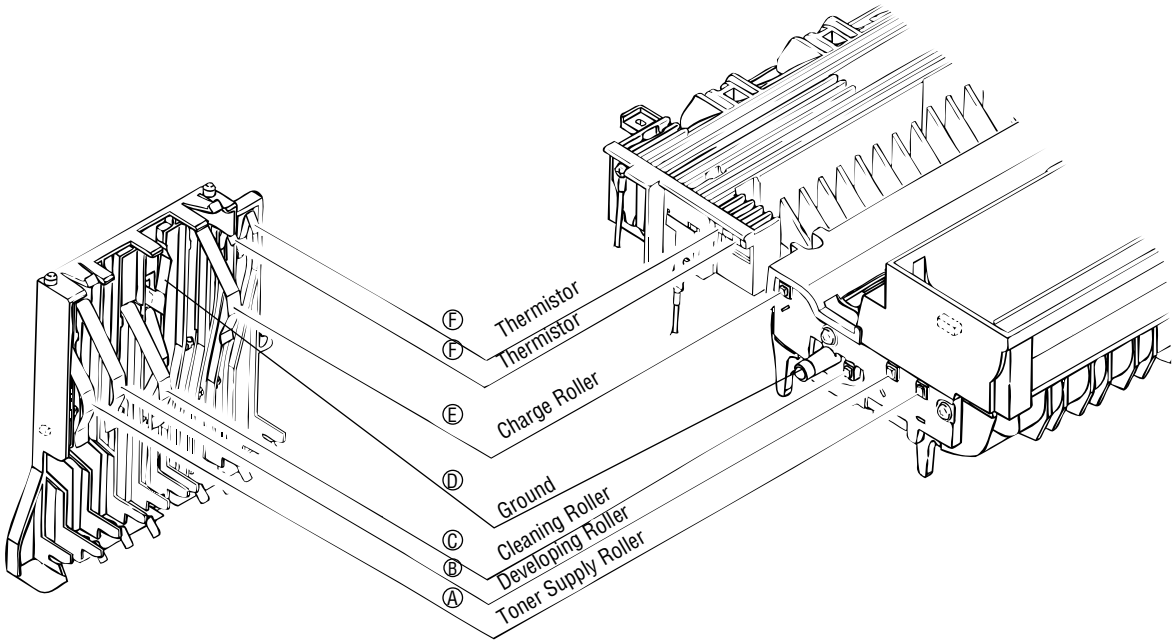

Ⓕ Thermistor
Ⓕ Thermistor
Ⓔ Charge Roller
Ⓓ Ground
Ⓒ Cleaning Roller
Ⓑ Developing Roller
Ⓐ Toner Supply Roller

Figure 6-5

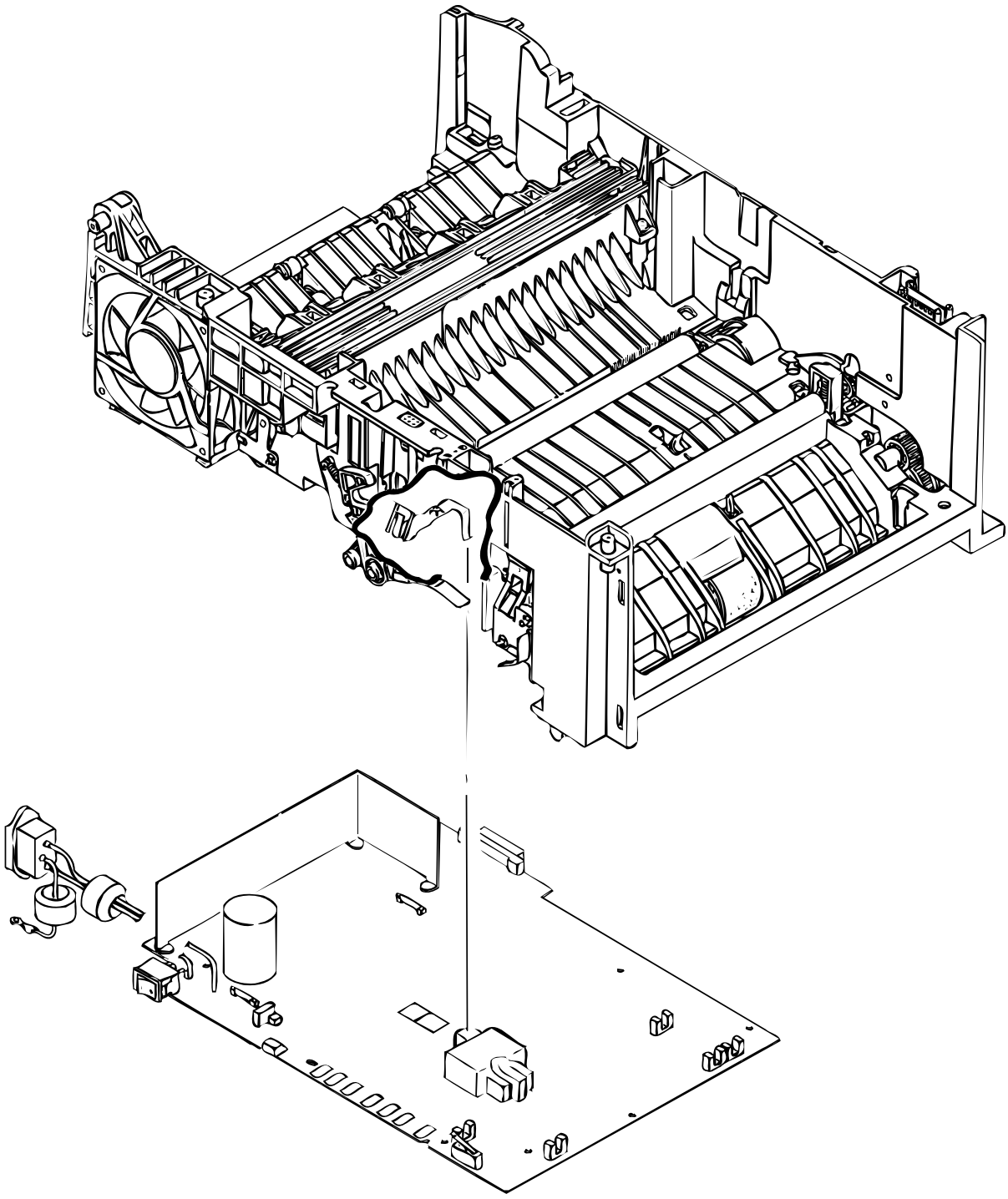
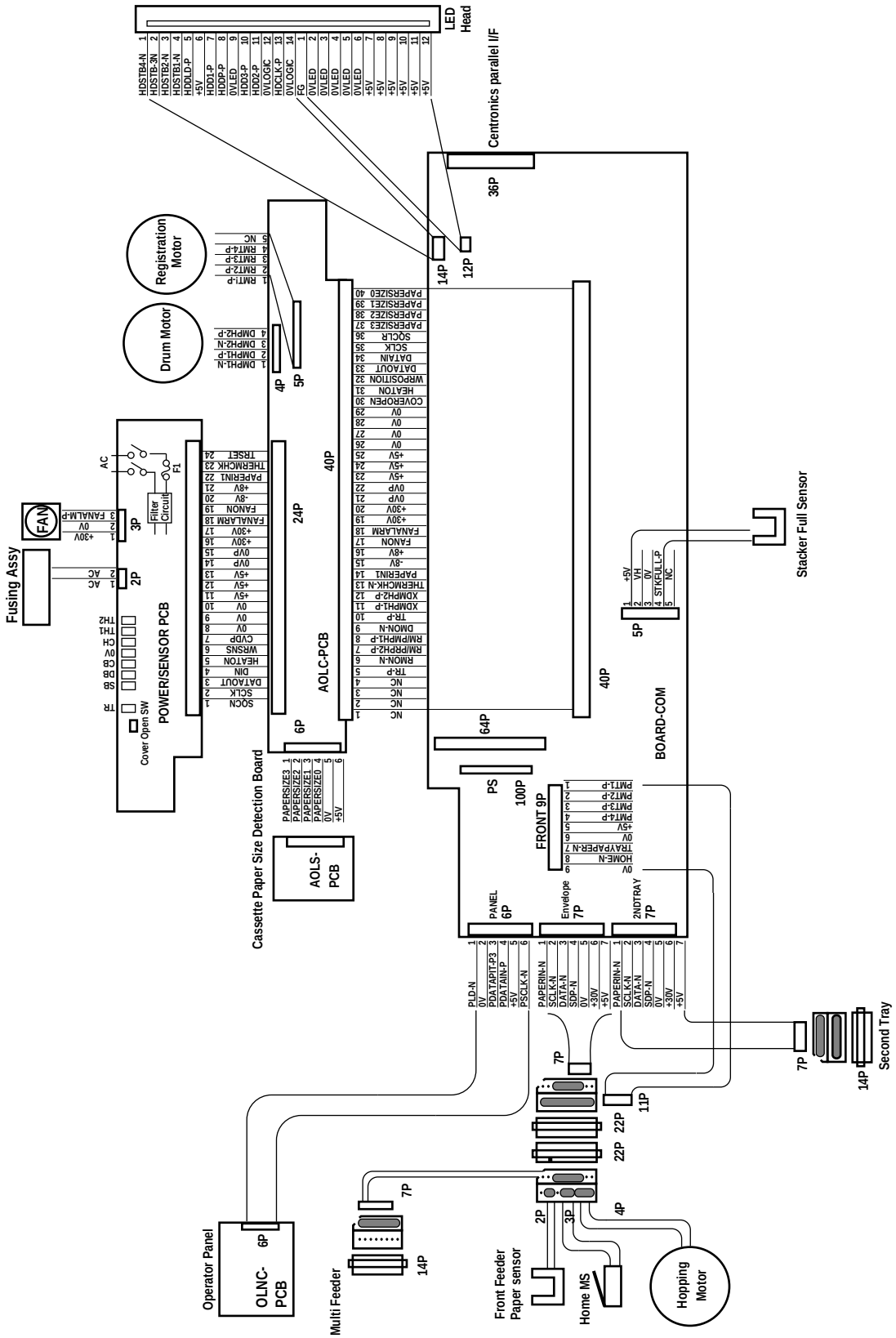


Figure 6-6

7. WIRING DIAGRAM

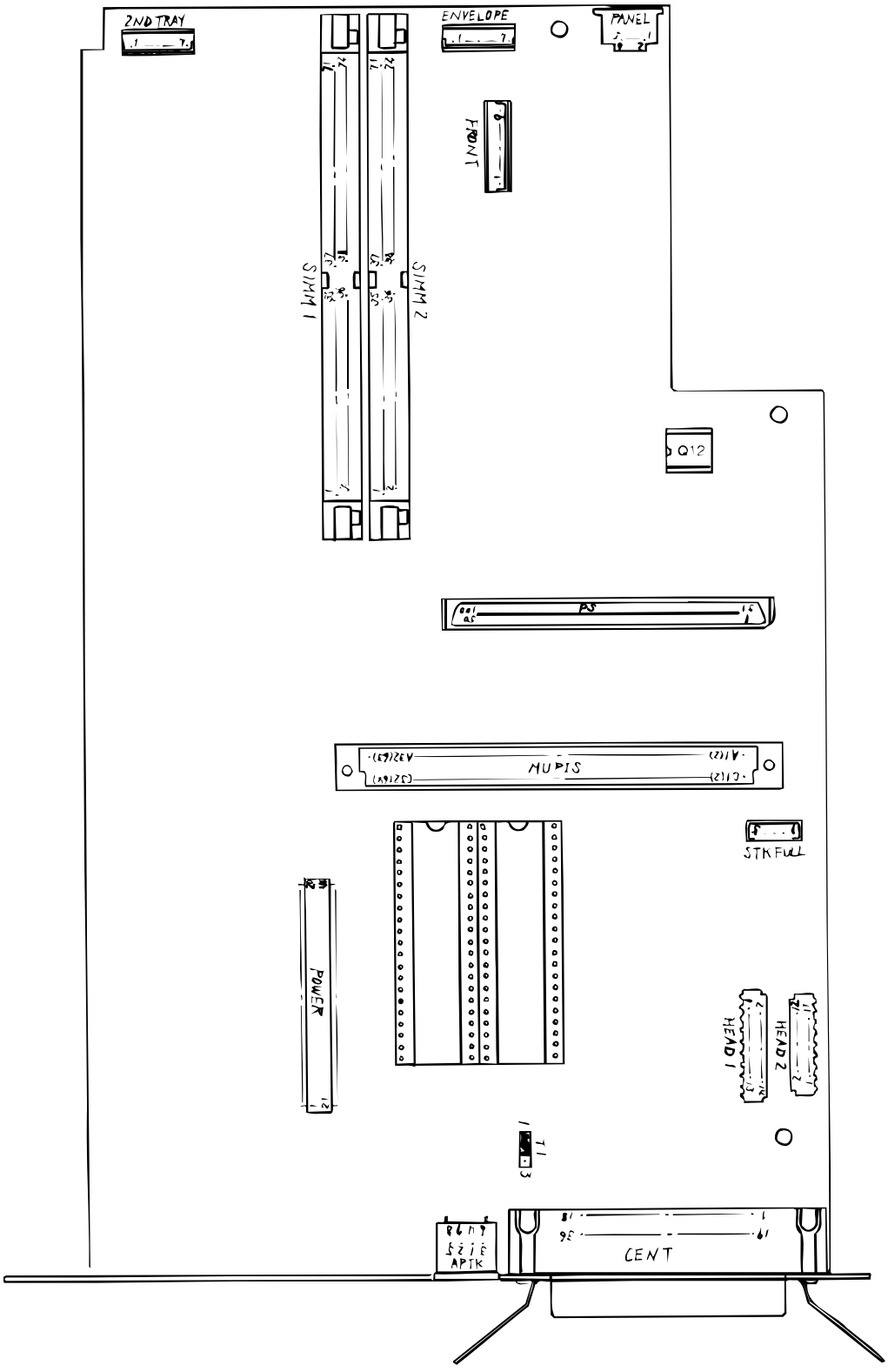
7. WIRING DIAGRAM

7.1 Interconnect Signal Diagram

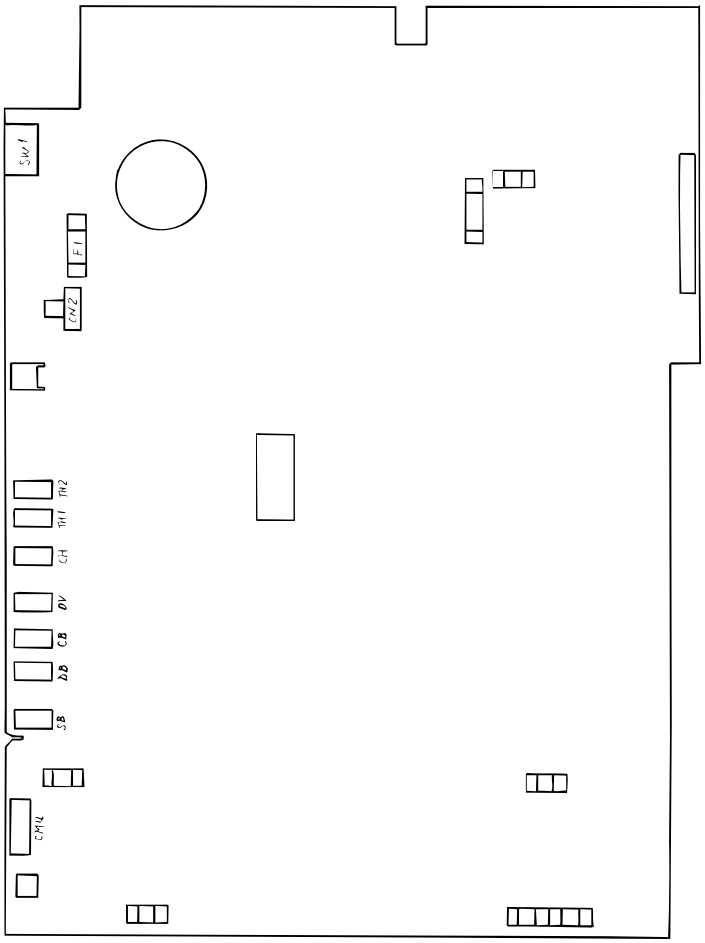


7.2 PCB Layout

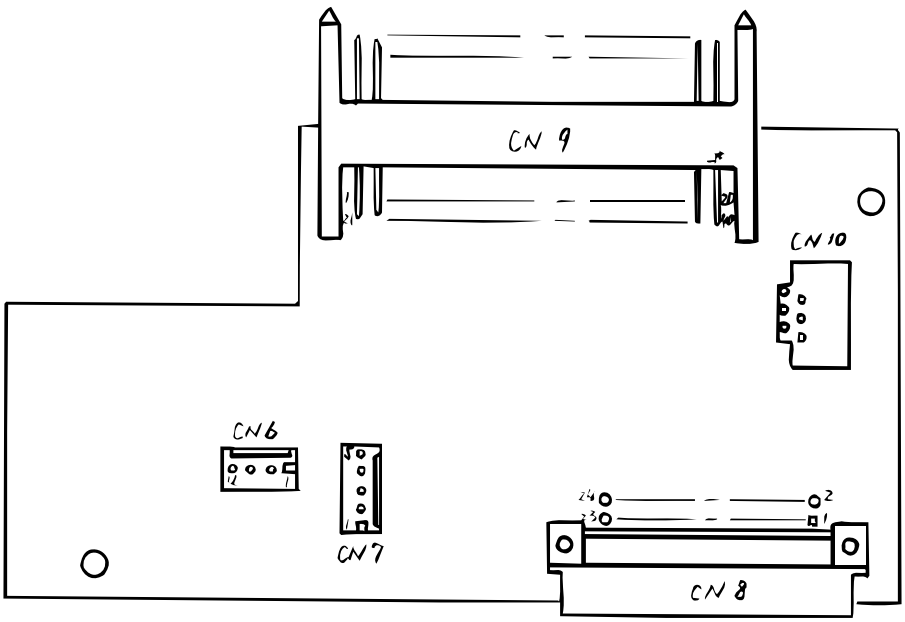
(1) Main board (BOARD-COM)



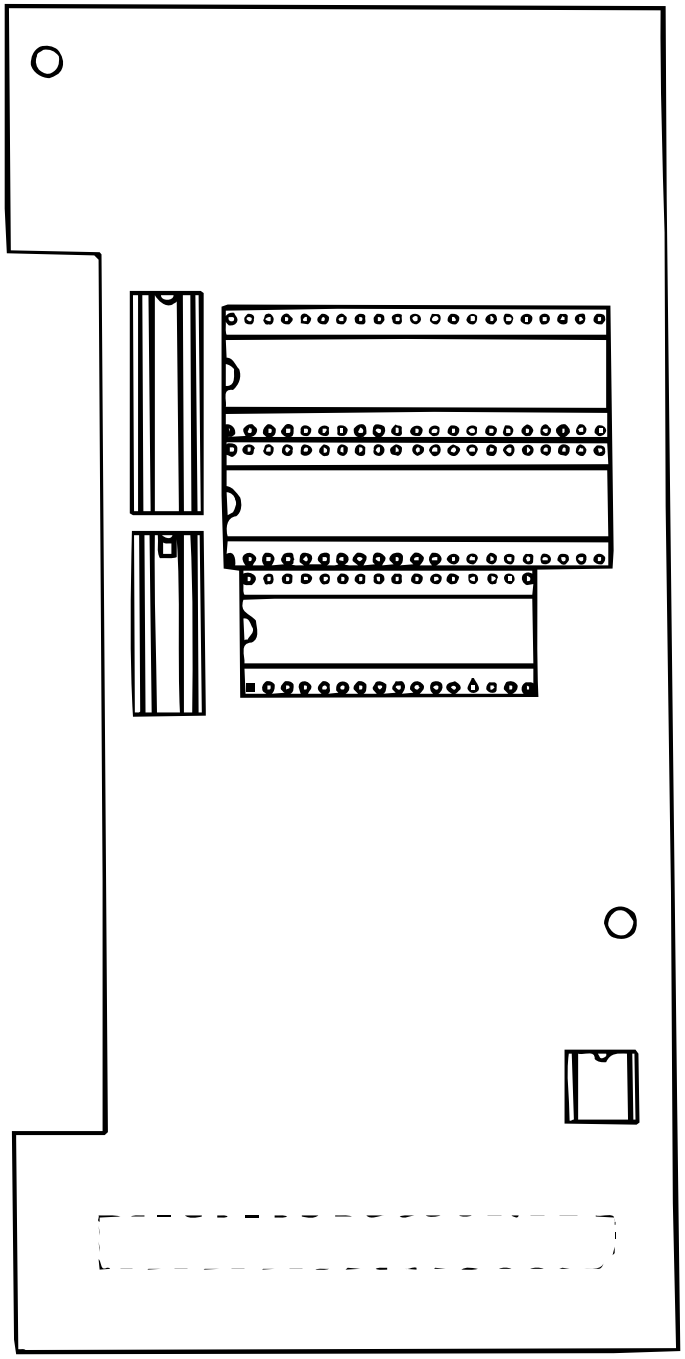
(2) Power/Sensor board



(3) Driver board (AOLC-PCB)

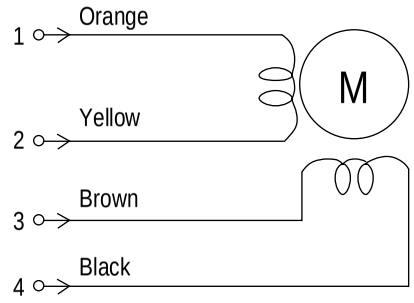
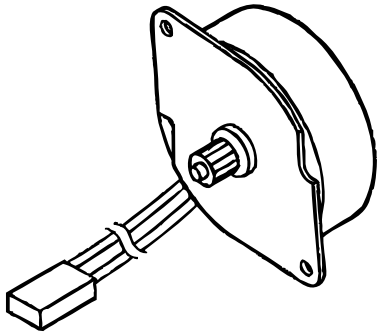
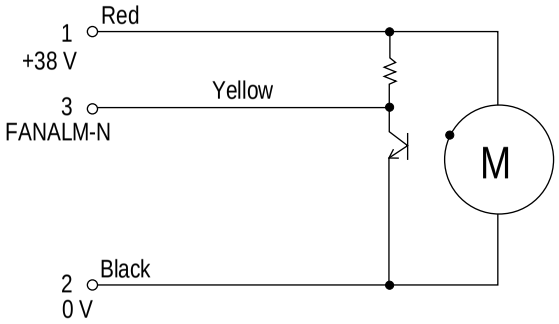
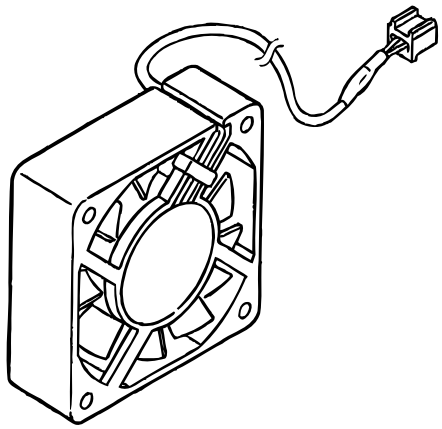


(4) PostScript board (BOARD-PSBA) (Option)



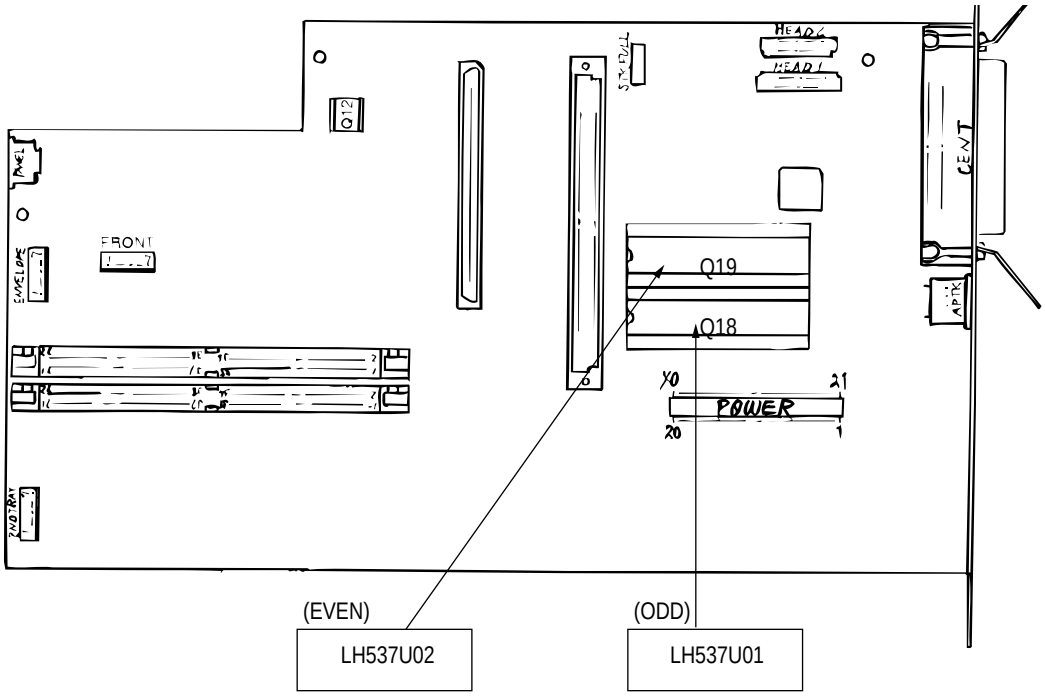
7.3 Resistance Check

Unit	Circuit Diagram	Illustration	Resistance
Registration motor			Between pins 1 and 2: 6.7W Between pins 3 and 4: 6.7W
Drum motor			Between pins 1 and 2: 4.3W Between pins 3 and 4: 4.3W
Fusing Unit			Between pins 1 and 2: 220kW (at 25°C) Between pins 3 and 4: 2.3W (120V) 8.5W (240V)

Unit	Circuit Diagram	Illustration	Resistance
Hopping motor			Between pins 1 and 2: 6.7W Between pins 3 and 4: 6.7W
Fan			Between pins 1 and 2: 4.9KW

7.4 Program/Font ROM Location

(1) BOARD-COM



8. PARTS LIST

8. PARTS LIST

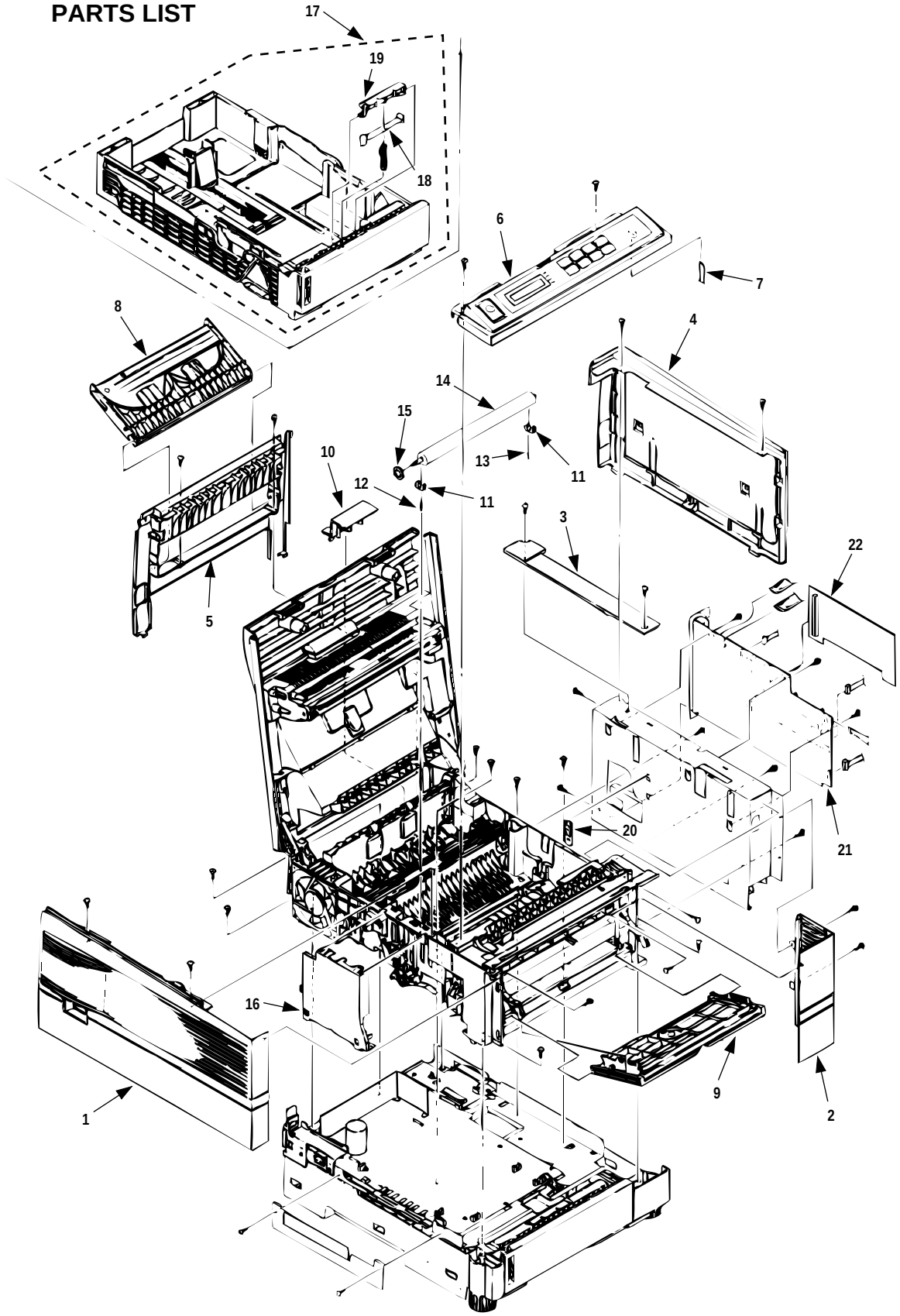


Figure 8-1 Printer Unit

Table 8-1 Printer Unit

	Name / Rating	Parts No.	Q'ty	Q'ty			Remarks
				50	500	1000	
1	Side cover (L) Assy	3PP4128-1118G1	1	1	3	6	53073501
2	Side cover (R)	1PP4128-1065P1	1	1	3	6	53073601
3	Cover Frame	40033501	1	1	3	6	
4	I/F cover assy	2PA4128-1066G1	1	1	3	6	53073801
5	Rear cover	1PP4128-1069P1	1	1	3	6	53073901
6	Operator panel assy (ODA op16n)	40035401	1	1	3	6	
	Operator panel sheet (ODA op16n/PS)	40035502	1	1	3	6	
	Operator panel assy (OEL/INT)	40035403	1	1	3	6	
7	Flexible cable (OP panel)	238A1071P0012	1	2	5	10	56627901
8	Face-up stacker assy	2PA4128-1074G1	1	1	3	6	50108201
9	Manual feed hopper assy	2PA4128-1076G1	1	1	3	6	55700401
10	Connector cover	3PP4076-5052P1	1	0	3	6	53073301
11	TR shaft bearing	4PP4076-5035P1	2	0	3	6	51608501
12	Transfer roller spring (L)	4PP4076-5036P1	1	0	3	6	50928601
13	Transfer roller spring (R) (with red mark)	4PP4076-5039P1	1	0	3	6	
14	Transfer roller	3YB4076-5040P1	1	1	3	6	50408601
15	TR gear	4PP4076-5042P1	1	0	3	6	51234901
16	Contact assy	3PA4076-5090G1	1	1	3	6	56731101
17	Paper cassette assy	1PA4076-5430G1	1	1	3	6	50108001
18	Damper spring assy	40093801	1	0	3	6	
19	Separator frame assy	3PP4083-5663G1	1	1	3	6	53345601
20	FG plate BK (R)	4PP4076-5067P1	1	0	3	6	53346401
21	BOARD-COM	40030302	1	2	5	10	
22	BOARD-PSBA	4YA4046-1632G11	1	2	5	10	
	Program/font ROM (ODD)	8174624M0001	1	2	5	10	F/W Rev.
	Program/font ROM (EVEN)	8174624M0002	1	2	5	10	F/W Rev.
	PostScript ROM (ODD)	8174624M0004	1	2	5	10	
	PostScript ROM (EVEN)	8174624M0003	1	2	5	10	

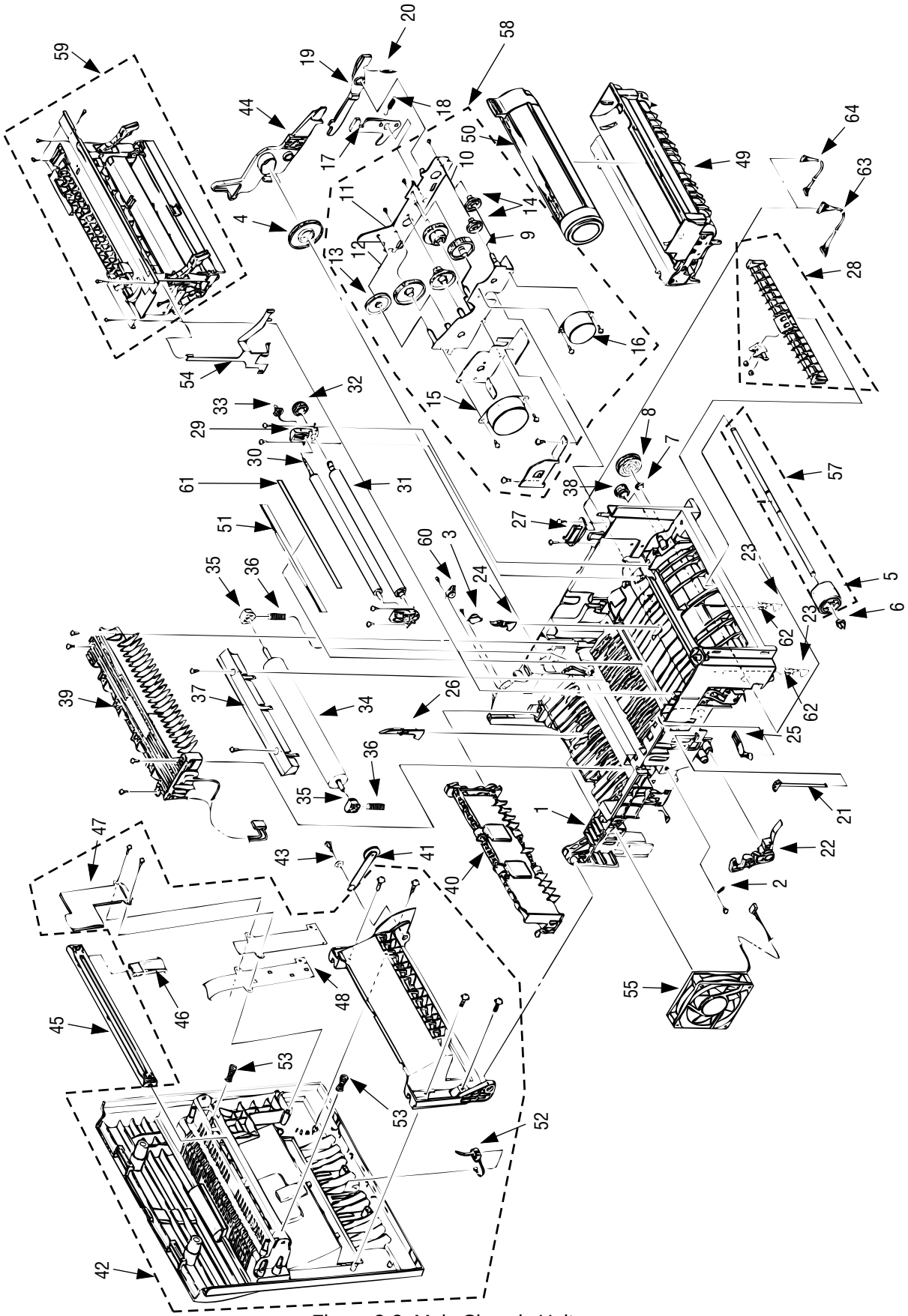


Figure 8-2 Main Shassis Unit

Table 8-2 Main Chassis Unit

	Name / Rating	Parts No.	Q'ty	Q'ty			Remarks
				50	500	1000	
1	Frame assy-Main	40106701	1	1	3	6	
2	Spring [EP lock lever (L) assy]	4LB-192600-6	1	0	3	6	50928306
3	Stacker cover damper	4PB4083-6197P1	1	1	3	6	51229401
4	Idle gear (exit)	4PP4043-4532P1	1	0	3	6	51234301
5	Hopping roller assy	4PA4076-5755G1	1	1	3	6	without sharft 50407901
6	Bearing L (Hopping roller assy)	4PP4076-5345P1	1	0	3	6	51608101
7	Bearing R (Hopping roller assy)	4PP4076-5308P1	1	0	3	6	51608201
8	Hopping roller gear (One way)	4PB4076-5327P1	1	0	3	6	51235501
9	Idle gear A	4PP4076-5061P1	1	0	3	6	51233701
10	Idle gear B	4PP4076-5062P1	1	0	3	6	51233801
11	Idle gear C	4PP4076-5063P1	1	0	3	6	51233901
12	Idle gear D	4PP4076-5064P1	1	0	3	6	51234001
13	Gear idle	40045101	1	0	3	6	
14	Registration idle gear	4PP4076-5068P1	2	0	6	12	51234201
15	Main motor	4PB4076-5075P2	1	1	3	6	56511801
16	Registration motor	4PB4076-5076P1	1	1	3	6	
17	EP lock lever	4PP4076-5044P1	1	0	3	6	50807301
18	EP lock spring	4PP4076-5045P1	1	0	3	6	50928401
19	Pressure release lever	3PP4076-5046P1	1	0	3	6	50807401
20	Spring (Pressure release lever)	4LB-192500-7	1	0	3	6	50922107
21	EP lock shaft	4PP4076-5047P1	1	0	3	6	51113301
22	EP lock lever (L) assy	4PA4076-5048G1	1	0	3	6	50807501
23	Sensor-In	40032901	2	0	6	12	
24	Paper sensor lever	3PP4076-5082P1	1	0	3	6	
25	Toner sensor lever	4PP4076-5086G1	1	0	3	6	
26	Exit sensor lever	3PP4076-5085P1	1	0	3	6	50807701
27	Square-shaped connector	220A1866P0220	1	2	5	10	22P fixed side 56730620
28	Paper supply guide D (A4) assy	3PA4076-5759G1	1	0	3	6	51015901
29	Registration bearing assy	4PA4076-5756G1	2	2	6	12	51608501
30	Pressure roller	3PP4076-5032P1	1	1	3	6	50408101
31	Registration roller	3PB4076-5030P2	1	1	3	6	80408201
32	Registration gear	4PP4043-4529P1	1	1	3	6	51234401
33	Pressure roller gear	4PP4043-4530P1	1	1	3	6	51234501
34	Fuser pressure roller (A4)	40032401	1	1	3	6	
35	Fuser pressure roller bearing	4PP4076-5051P1	2	0	6	12	51608601
36	Bias spring	4PP4043-4388P1	2	0	6	12	50928501
37	Fusing guide	2PP4076-5021P1	1	1	3	6	51016001
38	Idle gear (HF)	4PP4043-4535P1	1	0	3	6	50234601
39	Fusing assy	1YX4076-5100G1	1	2	10	20	120V 50219901
	Fusing assy	1YX4076-5100G2	1	2	10	20	230V 50219902

Table 8-2 Main Chassis Unit

	Name / Rating	Parts No.	Q'ty		Q'ty		Remarks
				50	500	1000	
40	Exit roller assy	2PA4076-5120G1	1	1	3	6	50408401
41	Damper arm	4PP4076-5191G1	1	1	3	6	53073101
42	Stacker assy for EECD HEAD (ODA)	40031601	1	0	3	6	Note 1
	for Normal HEAD (ODA, OEL, INT)	2YX4128-1080G1	1	0	3	6	
43	Washer	4PP4076-5009P1	1	0	3	6	50516701
44	Fuser pressure roller release lever	3PP4076-5347P1	1	0	3	6	50808101
45	LED head Normal Type (OEL/INT)	4YA4116-1200G2	1	2	10	20	56111401
	EECD Type (ODA)	40029601	1	2	10	20	Note 1
46	Head cable assy						
	for Normal HEAD (ODA/OEL/INT)	4YX4076-5760G1	1	2	5	10	
	for EECD HEAD (ODA)	40110901	1	2	5	10	Note 1
47	Cable cover	2PP4128-1096P1	1	0	3	6	53073401
48	Cable guide (B)	3PB4128-1110P1	1	1	3	6	51016501
49	I/D unit		1				
50	Toner cartridge		1				
51	Anti-static strip	40106501	1	1	3	6	
52	Stacker full sensor assy	4YB4128-1101P2	1	2	5	10	
53	Head spring	4PP4128-1164P1	2	0	6	12	
54	Earth plate	4PP4043-4688P1	1	0	3	6	
55	DC fan motor	3PB4076-5290P1	1	1	3	6	
56	FG film	3PB4128-1181P1	1	1	3	6	
57	Hopping roller assy	4PA4076-5333G3	1	2	5	10	
58	Motor assy	3YX4076-5070G1	1	0	3	6	
59	Front feeder unit	1YX4076-5300G1	1	0	3	6	
60	Stacker cover damper	4PB4076-5015P1	1	1	3	6	
61	Anti-static film	3PB4083-6089P4	1	1	3	6	
62	Spring (Sensor-In)	40033001	2	0	6	12	
63	Nylon Connector Cord (11P-9P)	4YS4011-4463P1	1	2	5	10	
64	Nylon Connector Cord (7P-7P)	4YS4011-4448P3	1	2	5	10	

Note 1: The Serial No. will be informed by ECO later.

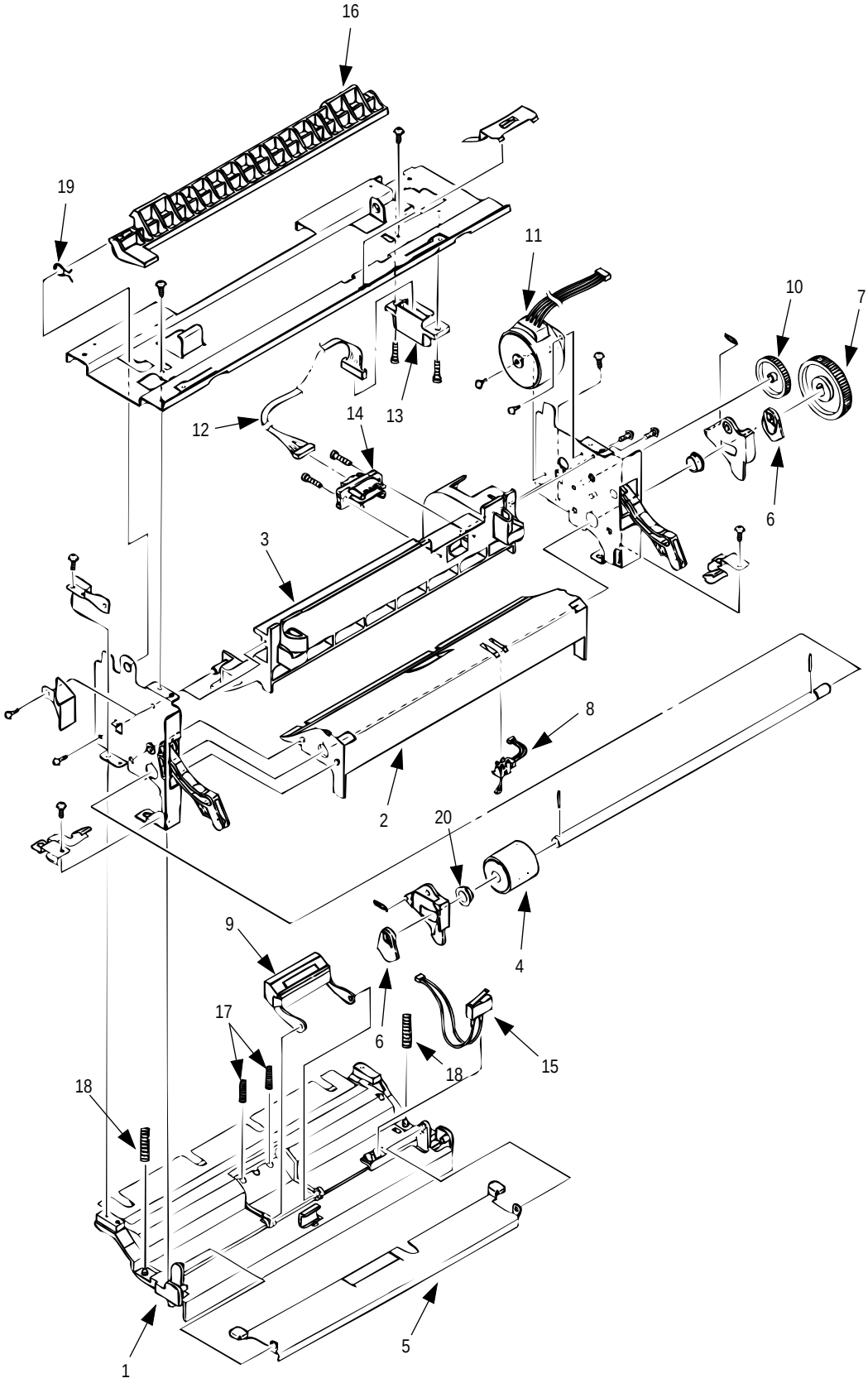
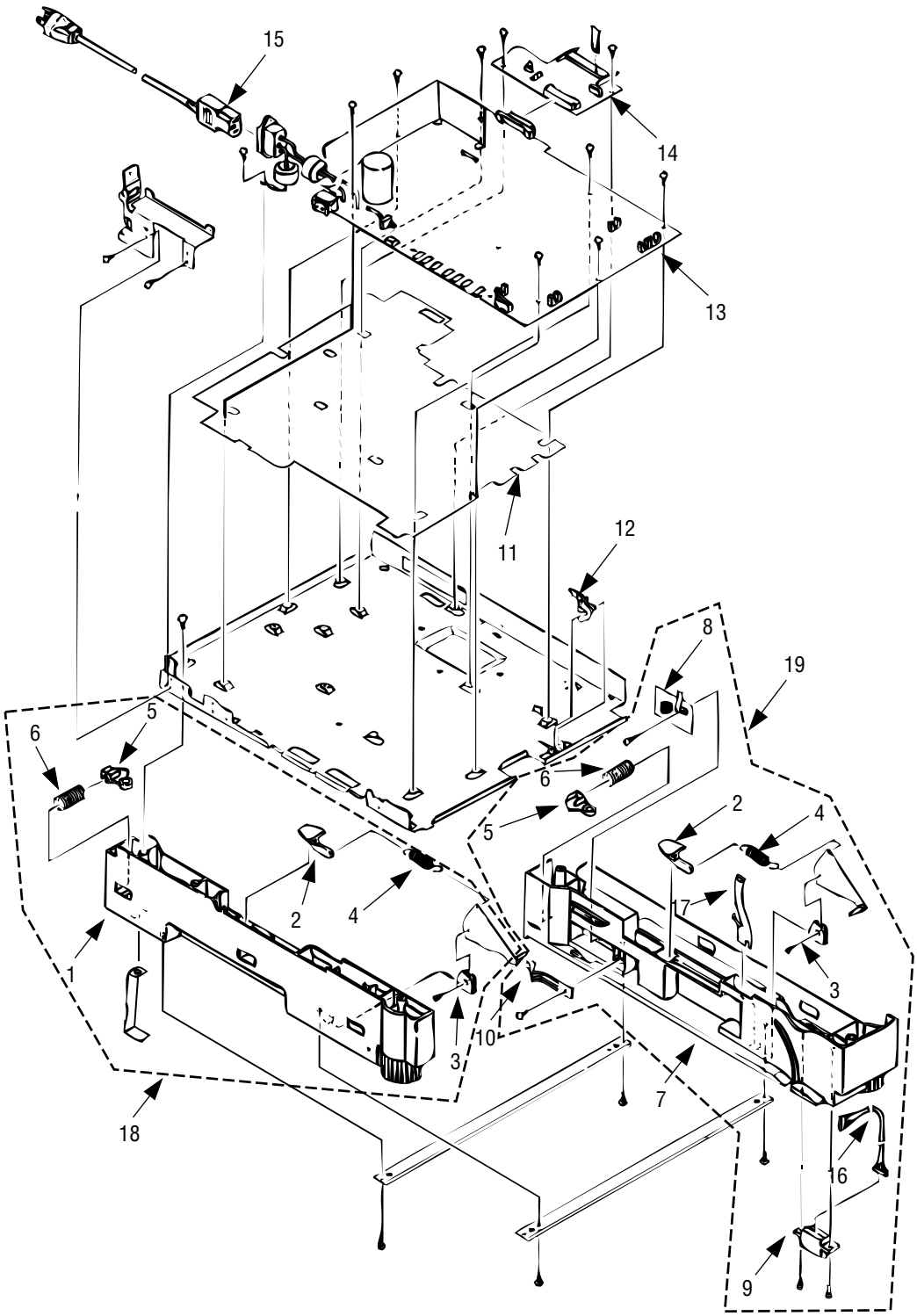


Figure 8-3 Front Feeder Unit

Table 8-3 Front Feeder Unit

	Name / Rating	Parts No.	Q'ty	Q'ty			Remarks
				50	500	1000	
1	Paper supply guide A (Affix)	3PP4076-5348G1	1	0	3	6	51016101
2	Paper supply guide B	1PP4076-5303P1	1	0	3	6	51016201
3	Paper supply guide C	1PP4076-5304P1	1	0	3	6	51016301
4	FF roller assy	4PA4076-5757G1	1	1	3	6	50408501
5	FF plate (Affix)	4PP4076-5310G1	1	1	3	6	51016601
6	FF cam	4PP4076-5313P1	2	0	6	12	51235601
7	Front feeder gear	4PB4076-5314P1	1	0	3	6	51234701
8	Front feeder paper end sensor	4YB4076-5316P1	1	2	5	10	50408901
9	Separator assy	4PP4076-5317G1	1	1	3	6	53346301
10	Idle gear	4PP4076-5326P1	1	0	3	6	51234801
11	Hopping motor	4PB4076-5330P1	1	1	3	6	56511701
12	Connector cord	4YS4011-4448P2	1	2	5	10	56730802
13	Square shaped connector (22P)	220A1866P0221	1	2	5	10	56730621
14	Square shaped connector (14P)	220A1866P0140	1	2	5	10	56730640
15	Switch assy	4PB4078-1412P1	1	2	5	10	56212901
16	Cover lock lever	3PP4076-5389P1	1	0	3	6	
17	Spring (Separator)	4LB-190500-5	2	1	3	6	
18	FF spring	4PP4043-4742P1	2	1	3	6	
19	Spring (Lock lever)	4PP4076-5391P1	1	0	3	6	
20	Bearing F	4PP4076-5308P1	2	1	3	6	



Firure 8-4 Base Unit

Table 8-4 Base Unit

	Name / Rating	Parts No.	Q'ty	Q'ty			Remarks
				50	500	1000	
1	Guide rail (L) Assy	2PP4076-5753G1	1	1	3	6	51016701
2	Pull block	4PP4122-1217P1	2	2	6	12	51500301
3	Link support	4PP4076-5358P1	2	2	6	12	50516801
4	Cassette lock spring	4PP4076-5417P1	2	0	6	12	50927302
5	Cassette stopper	4PP4076-5359P1	2	2	6	12	50607201
6	Pressure coil spring	4PP4043-4526P1	2	0	6	12	50928801
7	Guide rail (R) assy	2PP4076-5754G1	1	1	3	6	51016801
8	AOLS-PCB	4YA4046-1621G11	1	2	5	10	55077101
9	Square shaped connector (fixed side)	220A1866P0140	1	2	5	10	56730640
10	Detector spring	4PP4076-5360P1	1	1	3	6	50928901
11	Insulator	3PB4076-5144P1	1	1	3	6	51711001
12	Paper end lever	4PP4076-5154P1	1	1	3	6	50808201
13	Power/sensor-PCB (120V)	4YB4049-1879P1	1	2	5	10	
	Power/sensor-PCB (230V)	4YB4049-1880P1	1	2	5	10	
14	AOLC-PCB	4YA4046-1620G11	1	2	5	10	55077211
15	AC cord (ODA 120V)	3YS4011-1315P1	1	1	3	6	56609701
	AC cord (ODA 220V)	3YS4011-1266P1	1	1	3	6	
	AC cord (IPL 240V)	3YS4011-1329P2	1	1	3	6	
16	Nylon connector cord	4YS4011-4448P3	1	2	5	10	56730803
17	Earth plate	4PP4076-5742P1		0	3	6	53346601
18	Guide rail assy (L)	1PA4076-5410G1	1	0	3	6	
19	Guide rail assy (R)	1YX4076-5420G1	1	0	3	6	

Appendix A CENTRONICS PARALLEL INTERFACE

1) Connector

- Printer side : 36-pin receptacle (Female)
  Type 57RE-40360-830B-D29 (made by Daiichi Denshi) or equivalent
- Cable side : 36-pin plug (Male)
  Type 57-30360 (made by Daiichi Denshi) or equivalent
  Plug-552274-1 (AMP), 552073-1 (AMP) or equivalent

2) Cable

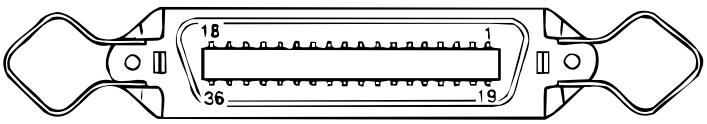
- Cable length : 6 ft (1.8 m) max.
  (A Shielded cable composed of twisted pair wires is recommended for noise prevention.)

Note: Cable is not supplied.

3) Table of parallel I/F signals

Pin No.	Signal name	Signal direction	Functions
1	DATA STROBE	Æ PR	Parallel data sampling strobe
2	DATA BIT - 1		
3	DATA BIT - 2		
4	DATA BIT - 3		
5	DATA BIT - 4	Æ PR	Parallel input data
6	DATA BIT - 5		
7	DATA BIT - 6		
8	DATA BIT - 7		
9	DATA BIT - 8		
10	ACKNOWLEDGE	¨ PR	Completion of data input or end of functioning
11	BUSY	¨ PR	During print processing or during alarm
12	PAPER END	¨ PR	End of paper
13	SELECT	¨ PR	Select state (ON-LINE)
14	Auto Feed	Æ PR	Request to change Mode
15	-		(Not used)
16	0V		Signal ground
17	CHASSIS GROUND		Chassis ground
18	+5V	¨ PR	50 mA max.
19 ⋮ 30	0V Signal ground		Signal ground
31	INPUT PRIME	Æ PR	Initializing signal
32	FAULT	¨ PR	End of paper or during alarm
33	0V		Signal ground
34	-		(Not used)
35	-		High level (3.3 kW)
36	Select In	Æ PR	Request to change Mode

• Connector pin arrangement



4) Signal level

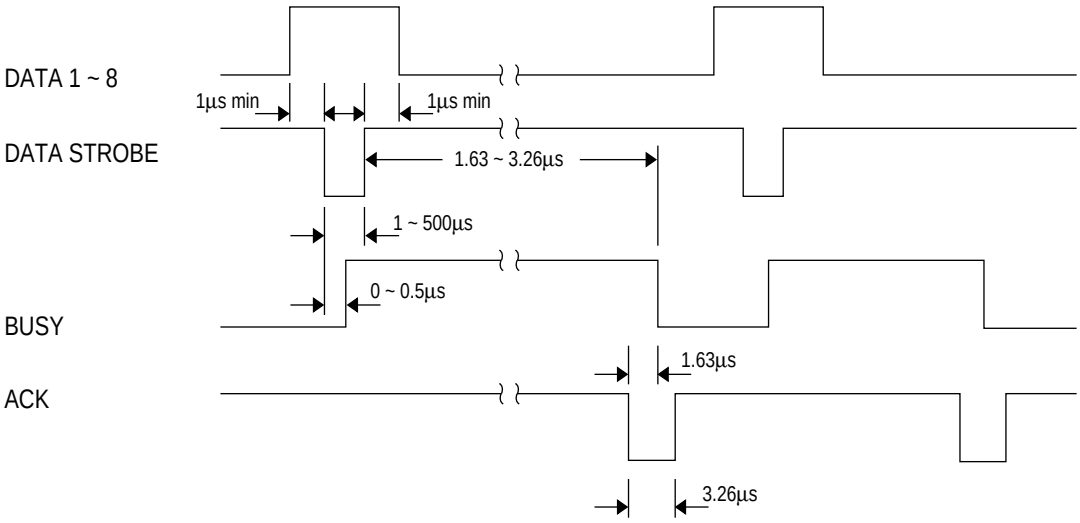
- LOW : 0 V to +0.8 V
- HIGH : +2.4 V to +5.0 V

5) Specifications

Item	Description
Mode	Compatibility mode, Nibble mode, ECP mode
Data bit length	8 bits: Compatibility mode, 4 bits: Nibble mode, 9 bits: ECP mode
Input prime	Valid/Invalid
Receive buffer	8K, 20K, 50K, 100K, 1M Bytes
Control	Handshaking control is performed in each mode. Data received from the host is stored in the receive buffer. Busy control is performed. Signal lead control is performed.

6) Timing charts

Data receiving timing



Appendix B
High Capacity Second Paper Feeder Maintenance

PREFACE

This Maintenance Manual is intended for the service personnel and describes the field maintenance methods for High Capacity Second Paper Feeder option of OKIPAGE16n LED Page Printer.

Refer to the USER'S MANUAL for the equipment handling and operation methods.

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1. OUTLINE

1.1 Functions

The printer is mounted on top of this High Capacity Second Paper Feeder, and it supplies paper automatically through the operation of hopping motor, which is driven by signals sent from the printer.
The main functions are the followings:

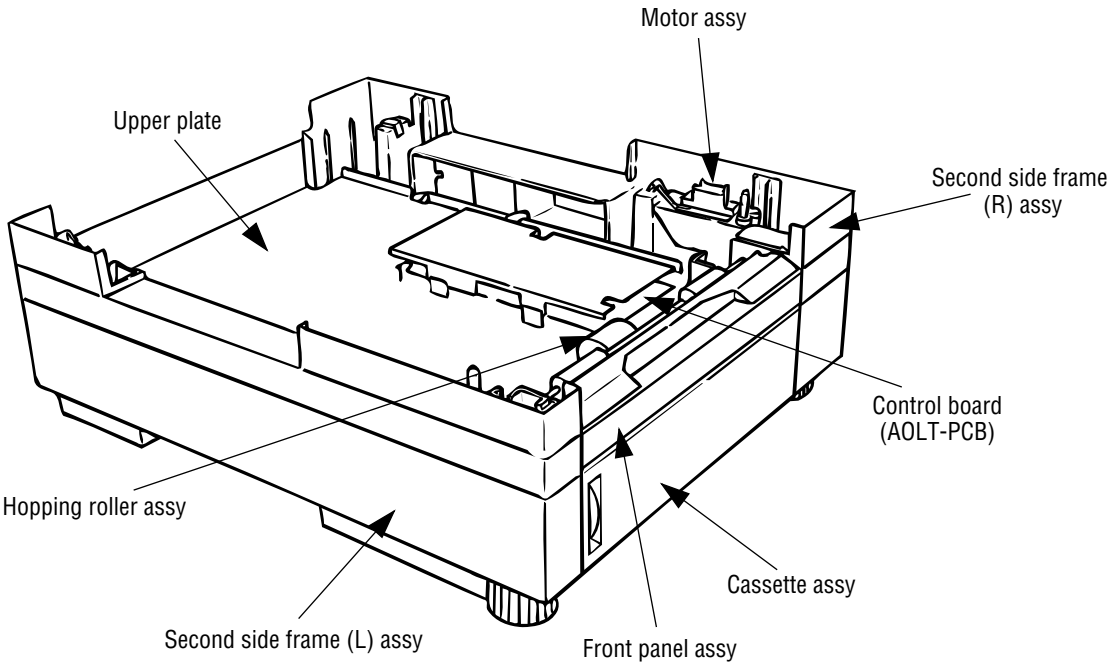
- Paper that can be used:

[Paper Type]
- Cut Sheet Size: A4, A5, B5, Letter, Executive, Legal13, Legal14
- Special Size: Paper Width: 148 to 216mm
  Paper length: 210 to 356mm

[Weight]
- 64 ~ 81 g/m^2

- Paper setting quantity: 500 sheets of paper weighing 64 g/m^2

1.2 External View and Component Names



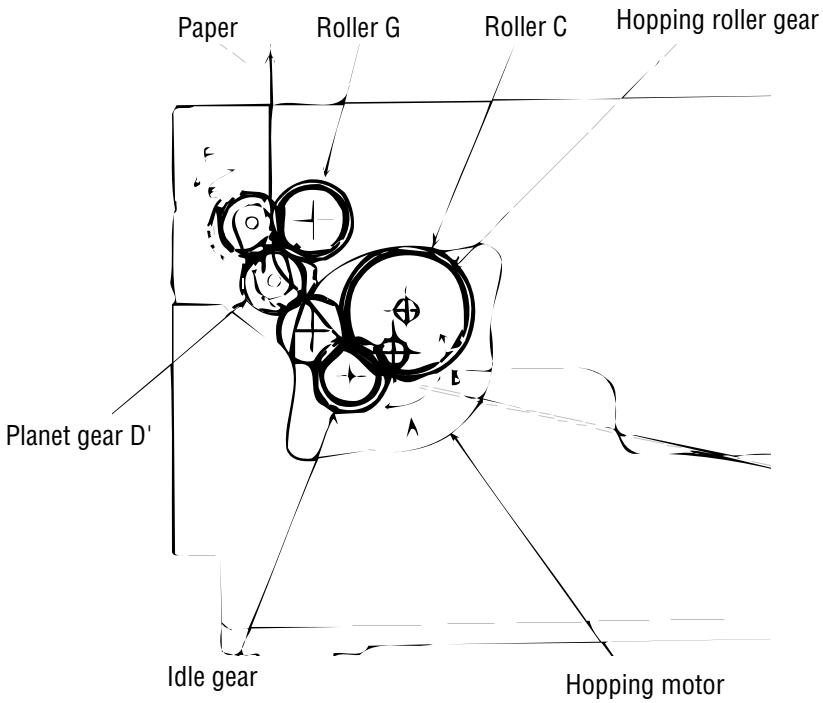
2. MECHANISM DESCRIPTION

2.1 General Mechanicsm

The sheet at the very top of the stack in the paper cassette is fed into the printer, one at a time, when the High Capacity Second Paper Feeder receives the signal from the printer.

(1) First, the hopping motor rotates in the direction of arrow A. The hopping gear is turned, via idle gear, and the roller C on the same shaft is turned. At the same time, the planet gear D' moves to the direction of the arrow E, roller G turns; the paper is fed for a predesignated distance until its leading edge reaches roller G.

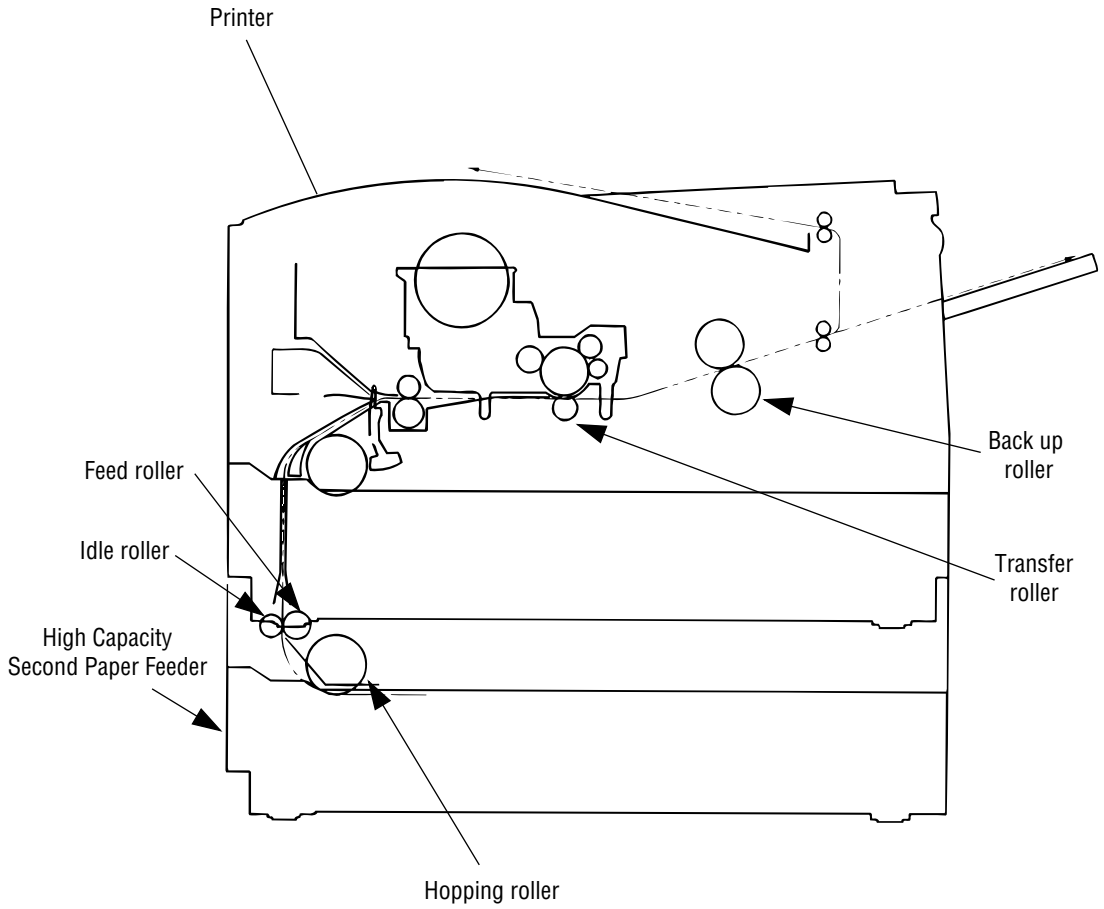
(2) Next, the hopping motor rotates in the direction of arrow B. While the hopping gear also turns at the same time, due to the one-way bearing being engaged at the hopping gear, the roller C does not turn. The planet gear D' moves to the direction of the arrow F, drives the Roller G and feeds the paper into the printer, until it reaches the registration roller of the printer.



Once the delivered into the printer, the paper is then controlled and fed through by registration motor of the printer.

2.2 Hopper Mechanism

The hopper automatically feeds the printer with the paper being set, single sheet at a time. When the paper is loaded in the paper cassette, it is then transported by the hopping motor, carrying forward only a single sheet caught by the brake shoe at a time.



3. PARTS REPLACEMENT

This section covers the procedures for the disassembly, reassembly and installations in the field. This section describes the disassembly procedures, and for reassembly procedures, basically proceed with the disassembly procedures in the reverse order.

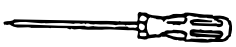
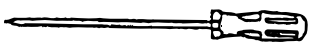
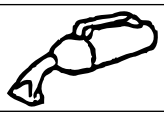
3.1 Precautions Concerning Parts Replacement

(1) Parts replacements must be carried out, by first turning the printer power switch off “O” and removing the High Capacity Second Paper Feeder from the printer.
(2) Do not disassemble the Second Paper Feeder if it is operating normally.
(3) Establish the extent of disassembly suitable for the purpose of the procedure, and do not disassemble any more than necessary.
(4) Only specified service tools may be used.
(5) Disassembly must be carried out according to the prescribed procedures. Parts may be damaged if such procedures are not followed.
(6) Small parts such as screws and collars can easily be lost, therefore these parts should be temporarily fixed in the original location.
(7) When handling printed circuit boards, do not use any glove which may generate static electricity.
(8) Do not place the printed circuit boards directly on the equipment or floor.

[Service Tools]

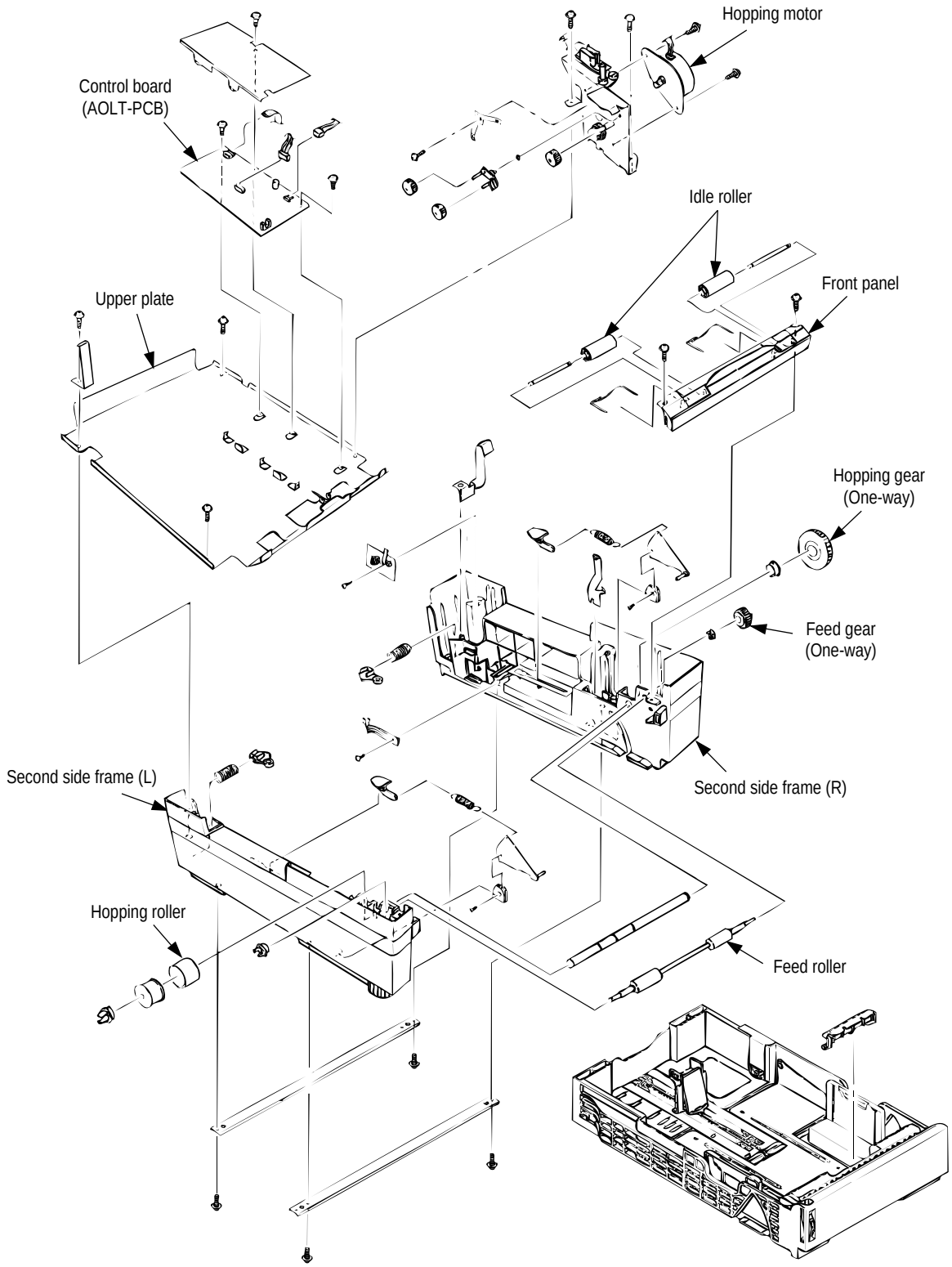
Table 3-1 shows the tools required for the replacement of printed circuit boards and units in the field.

Table 3-1 Service Tools

No.	Service Tools		Q'ty	Place of use	Remarks
1		No. 1-100 Philips screwdriver	1	2~2.5 mm screws	
2		No. 2-100 Philips screwdriver	1	3~5 mm screws	
3		No. 3-100 screwdriver	1		
4		No. 5-200 screwdriver	1		
5		Digital multimeter	1		
6		Pliers	1		
7		Handy cleaner	1		
8		Connector remover	1	OKI P/N: 4PP4076-5395P1	

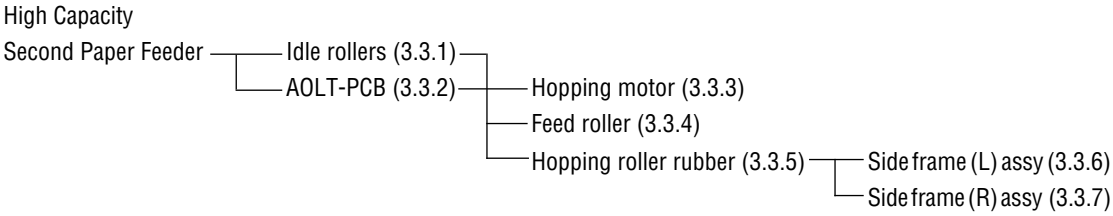
3.2 Parts Layout

This section describes the layout of the main components.



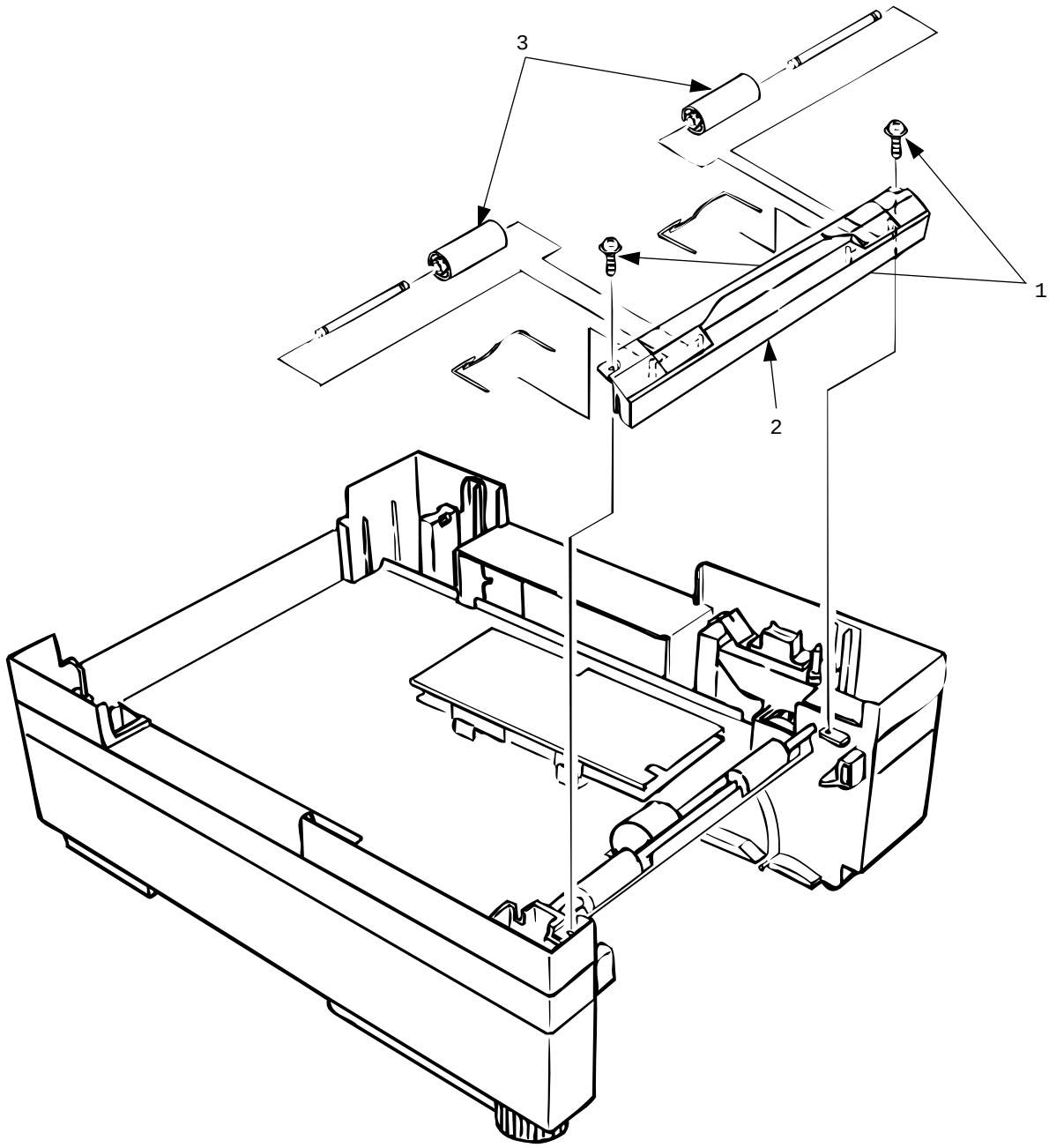
3.3 Parts Replacement Methods

This section describes the parts replacement methods for the components listed in the disassembly order diagram below.



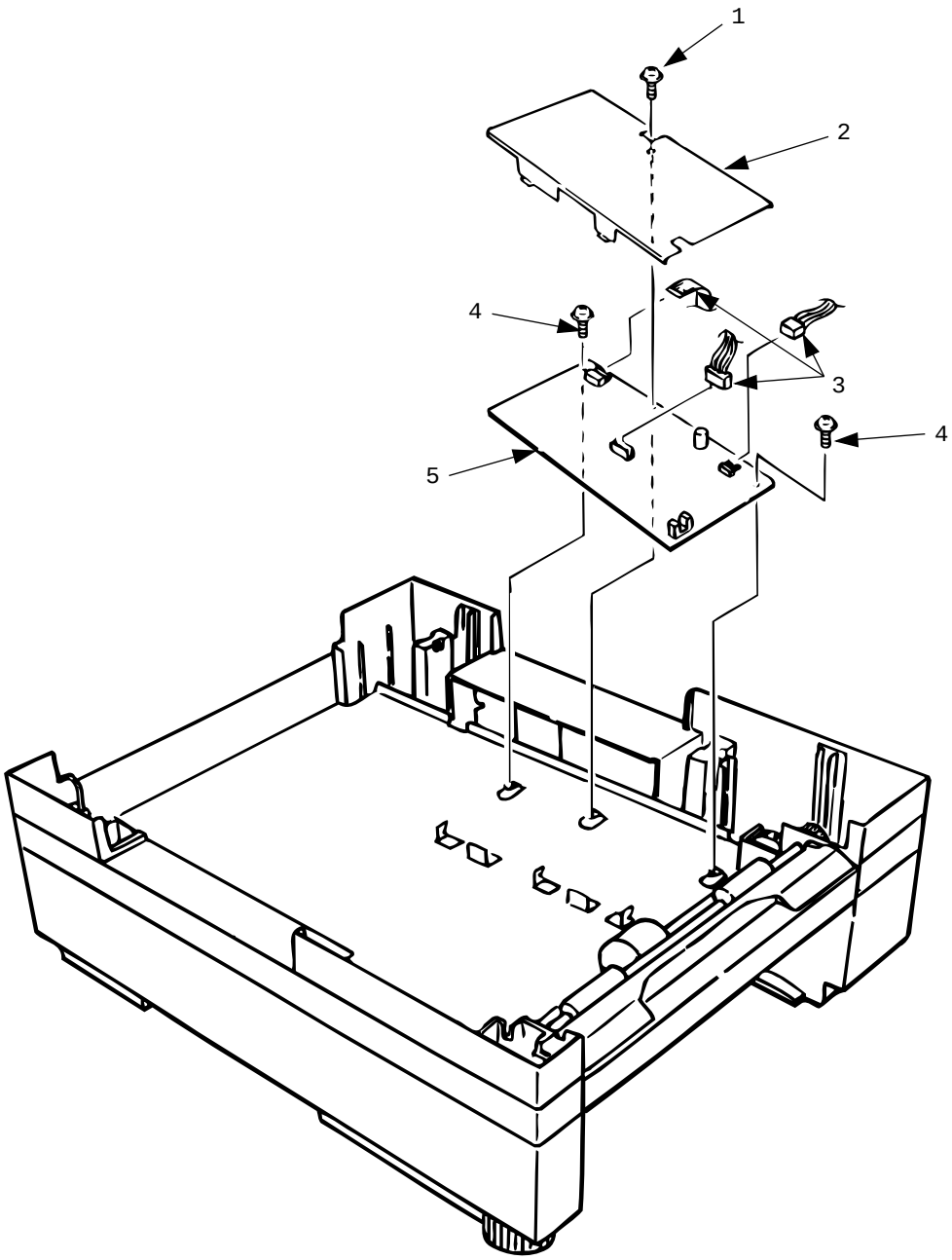
3.3.1 Idle rollers

(1) Remove two screws 1 and remove the front panel assy 2 .
(2) Remove two idle rollers 3 .



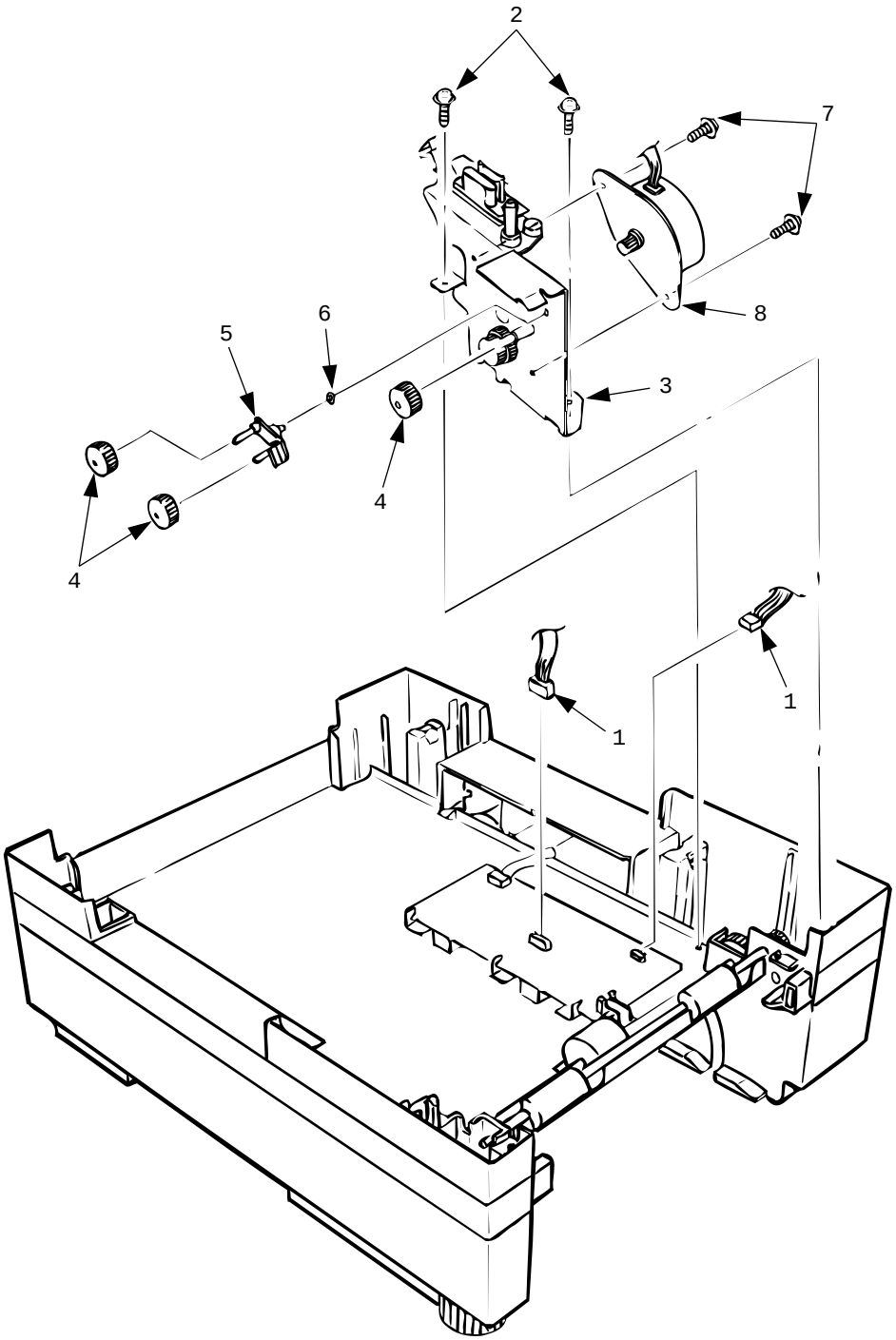
3.3.2 AOLT-PCB

(1) Remove the screw 1 and remove the PCB cover 2 .
(2) Remove three connectors 3 and two screws 4 , then remove the AOLT-PCB 5 .



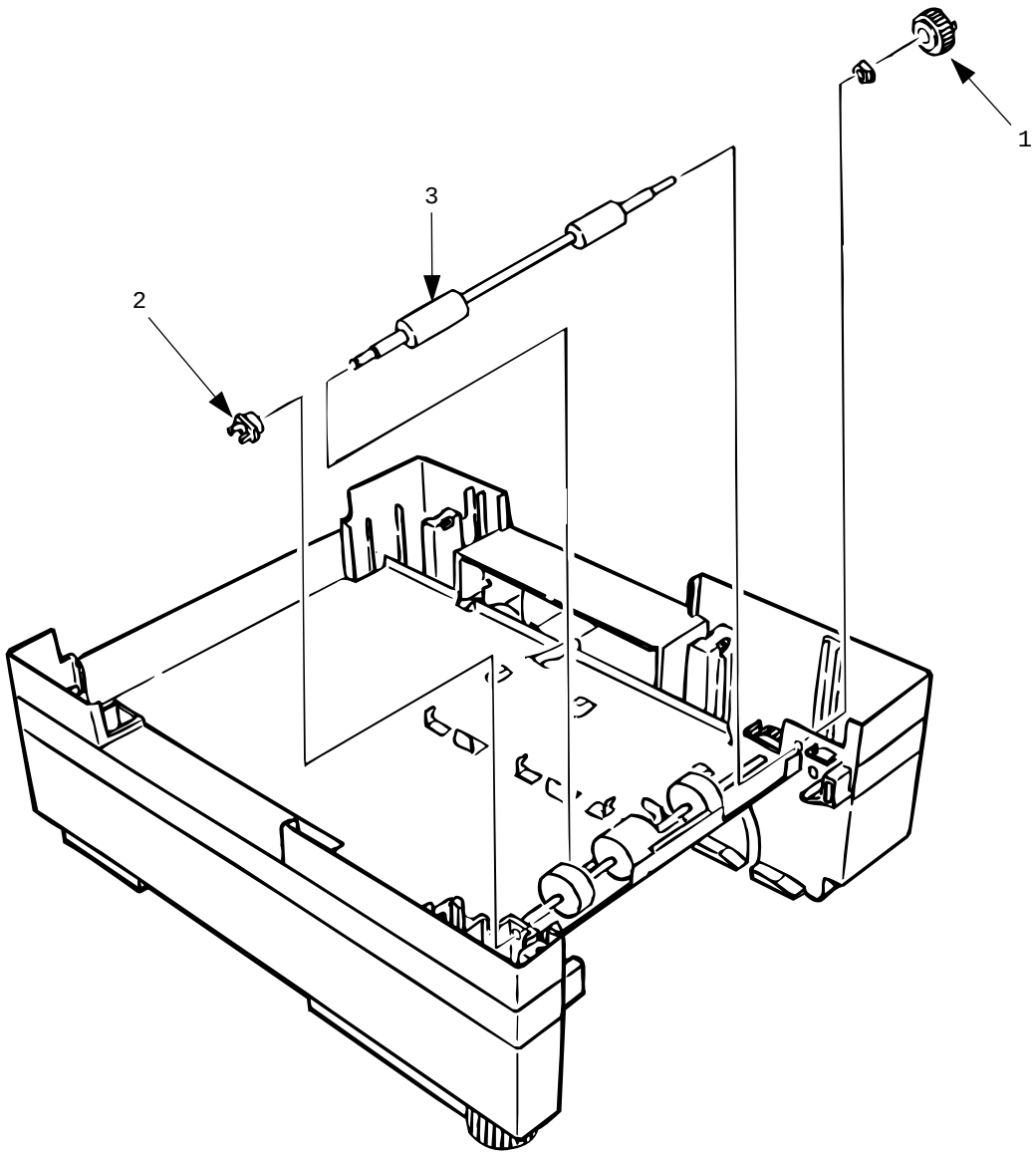
3.3.3 Hopping motor

(1) Remove the front panel assy (see 3.3.1 step1).
(2) Remove the PCB cover (see 3.2.2 step1).
(3) Remove two connectors 1 and two screws 2 , then remove the hopping motor assy 3 . Three gears 4 and the connecting lever 5 , as well as the wave washer 6 all come off at the same time, so be careful not to lose them.
(4) Remove two screws 7 and remove the hopping motor 8 .



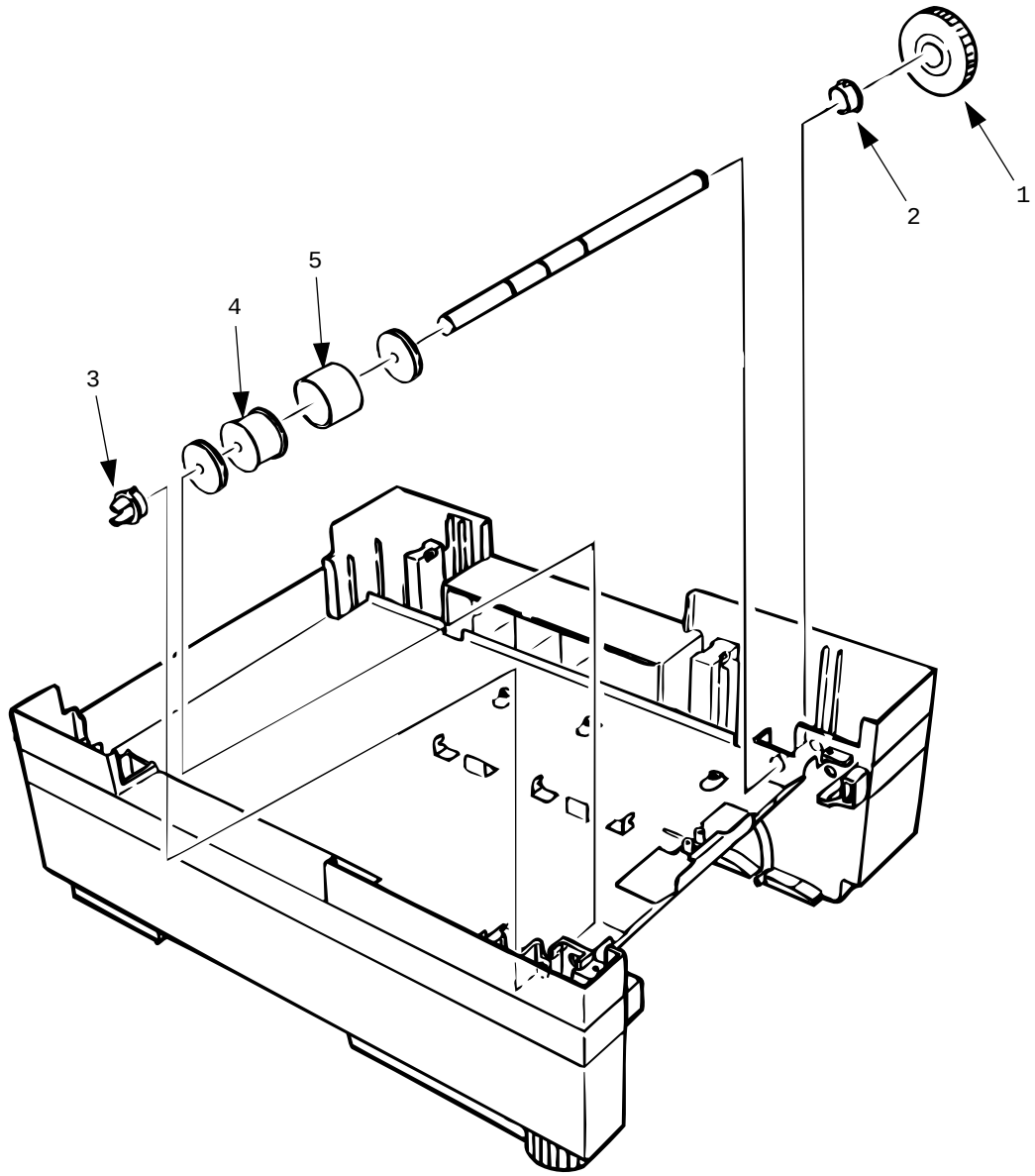
3.3.4 Feed roller

(1) Remove the front panel assy (see 3.3.1 step1).
(2) Remove the AOLT-PCB (see 3.3.2).
(3) Remove the hopping motor assy (see 3.3.3).
(4) Remove the latch on the feed roller gear 1 and remove the feed roller gear 1.
(5) Remove the latch on the feed roller bearing 2 and remove the feed roller bearing 2.
(6) Shift the feed roller 3 to the right side and lift it out, holding it on the left side.



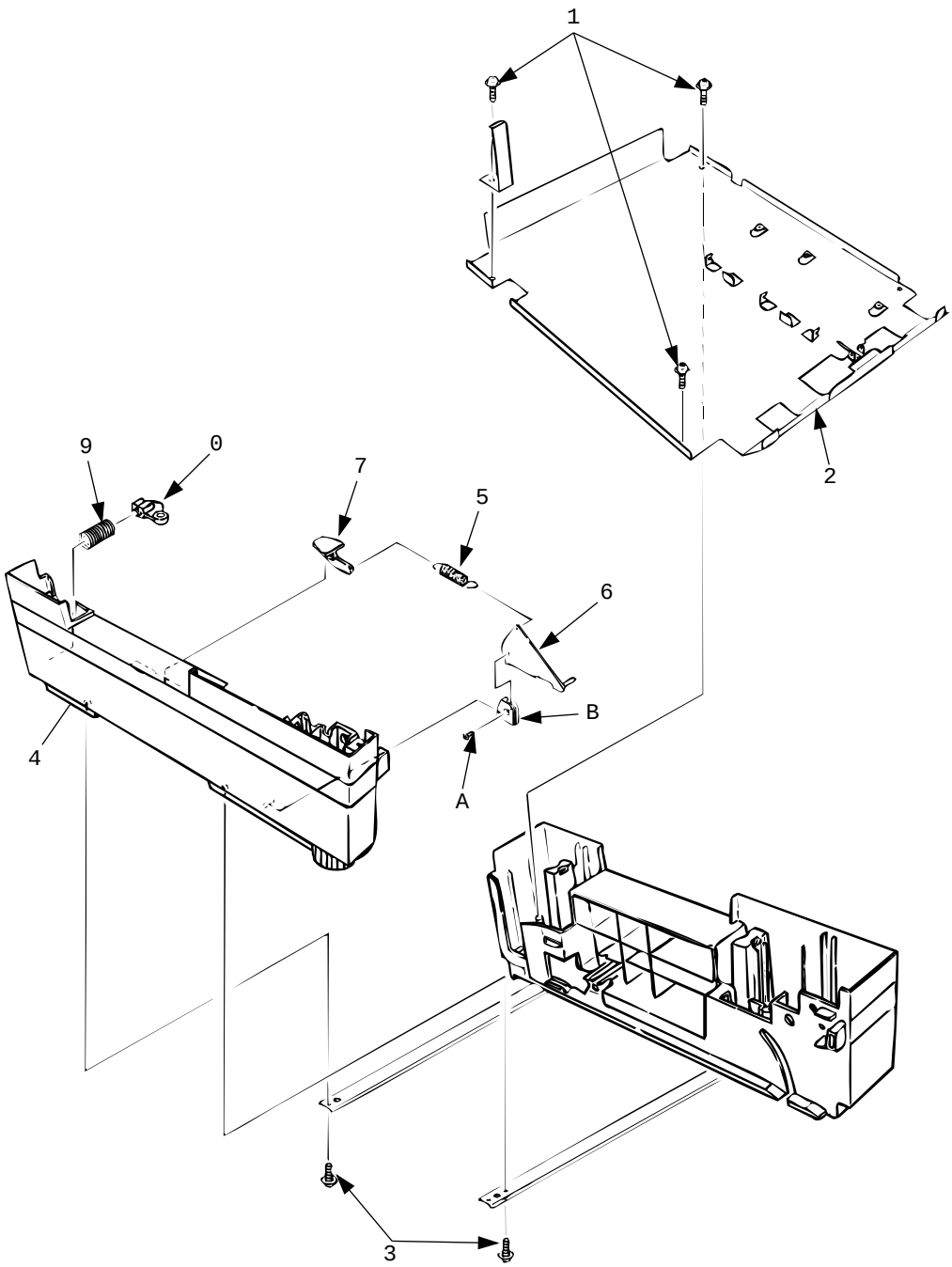
3.3.5 Hopping roller rubber

(1) Remove the feed roller (see 3.3.4).
(2) Remove the latch on the hopping roller gear 1 and remove the hopping roller gear 1. The bearing F 2 comes off at the same time, so be careful not to lose it.
(3) Remove the latch on bearing L 3 and remove the bearing L 3.
(4) Remove the hopping roller 4 and remove the hopping roller rubber 5 from it.



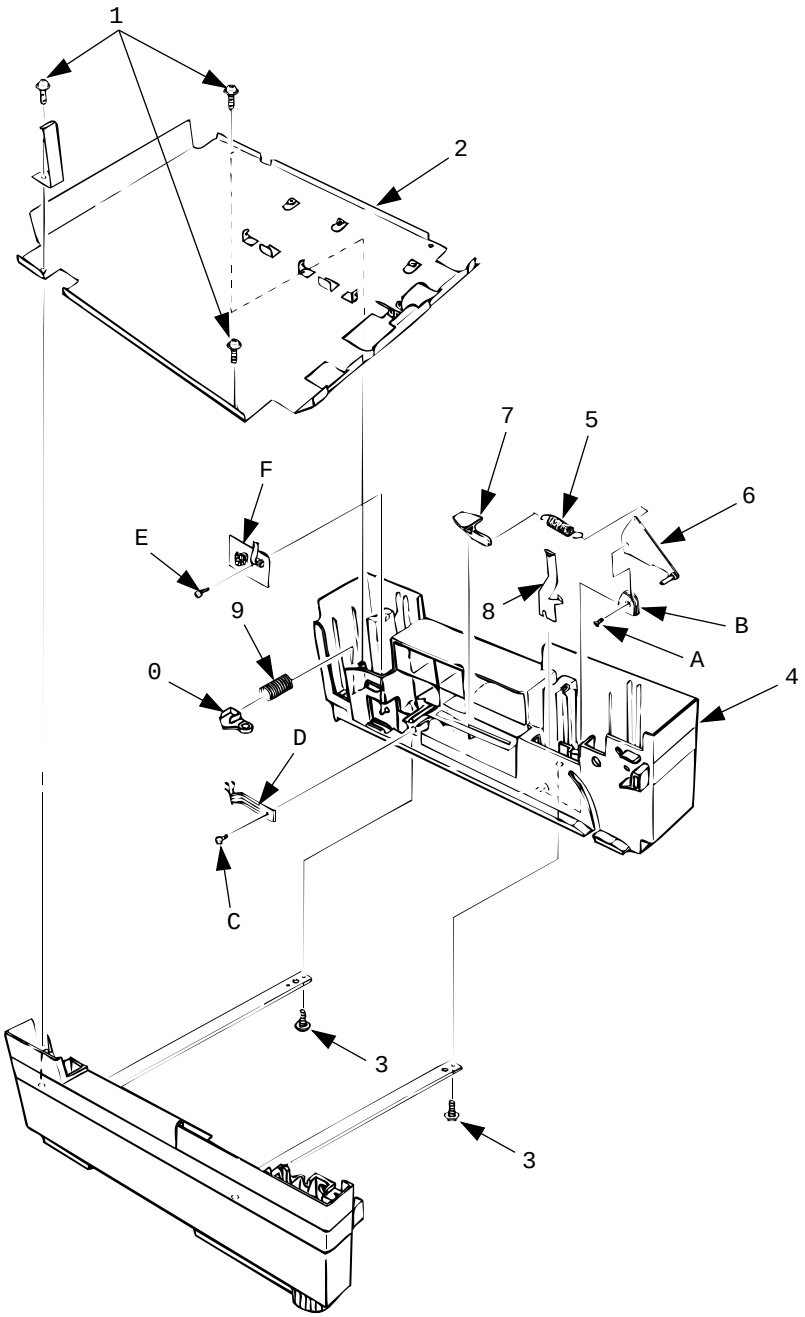
3.3.6 Side frame (L) assy

(1) Remove the hopping roller (see 3.3.5).
(2) Remove three screws 1 and remove the upper plate 2 .
(3) Remove two screws 3 and remove the side frame (L) assy 4 .
(4) Remove the cassette lock spring 5 , link 6 , pull block 7 (note the directions of the hooks of the cassette lock spring 5).
(5) Remove the spring 9 and cassette stopper 0 .
(6) Remove the screw A and remove the link support B .



3.3.7 Side frame (R) assy

(1) Remove the hopping roller (see 3.3.5).
(2) Remove three screws 1 and remove the upper plate 2.
(3) Remove two screws 3 and remove the side frame (R) assy 4.
(4) Remove the cassette lock spring 5, link 6, pull block 7 and earth plate 8 (note the directions of the hooks of the cassette lock spring 5).
(5) Remove the spring 9 and remove the cassette stopper 0.
(6) Remove the screw A and remove the link support B.
(7) Remove the screw C and remove the detector spring D.
(8) Remove the screw E and remove the AOLD-PCB F.



4. TROUBLESHOOTING

4.1 Precautions Prior to the Troubleshooting

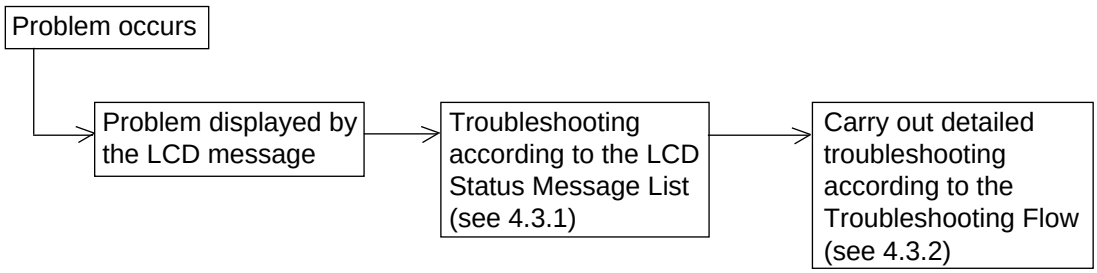
(1) Go through the basic checking items provided in the Operator Guide.
(2) Obtain detailed information concerning the problem from the user.
(3) Go through the checking in the conditions similar to that in which the problem occurred.

4.2 Preparations for the Troubleshooting

(1) Display on the Operator panel
The status of the problem is displayed on the LCD (Liquid Crystal Display) on the Operator panel. Go through the appropriate troubleshooting procedures according to the messages displayed on the LCD.

4.3 Troubleshooting Method

When a problem occurs, go through the troubleshooting according to the following procedure.


Problem occurs
Problem displayed by the LCD message
Troubleshooting according to the LCD Status Message List (see 4.3.1)
Carry out detailed troubleshooting according to the Troubleshooting Flow (see 4.3.2)

4.3.1 LCD Status Message List

The listing of the statuses and problems displayed in the form of messages on the LCD is provided in Table 4-1.

Table 4-1

Classification	LCD Status Message	Description	Recovery method
Jam error	PAPER INPUT JAM CHECK TRAY 2 PAPER FEED JAM CHECK TRAY 2	Notifies of occurrence of jam while the paper is being fed from the High Capacity Second Paper Feeder	• Check the paper in the High Capacity Second Paper Feeder. Carry out the recovery printing by opening the cover, removing jammed paper and closing the cover, and then turning the error display off. • When the problem occurs frequently, to through the Troubleshooting.
Paper size error	ERROR PAPER SIZE CHECK TRAY 2	Notifies of incorrect size paper feeding from the High Capacity Second Paper Feeder.	• Check the paper in the High Capacity Second Paper Feeder. Also check to see if there was a feeding of multiple sheets. Carry out the recovery printing by opening the cover, removing paper and closing the cover, and then turning the error display off.
Tray paper out	PAPER OUT mmmmmmmm TRAY 2 mmmmmmmm: Paper size in the tray being selected	Notifies of no paper or paper cassette state of the High Capacity Second Paper Feeder.	• Load the paper or paper cassette in the High Capacity Second Paper Feeder.
Interface Timeout	ERROR CONTROLLER 81	Notifies of occurrence of interface timeout between the printer and the High Capacity Second Paper Feeder.	• Verify connection of AOLT-PCB and square-shaped connector. Replace the square-shaped connector if necessary. • Replace AOLT-PCB.

4.3.2 Troubleshooting Flow

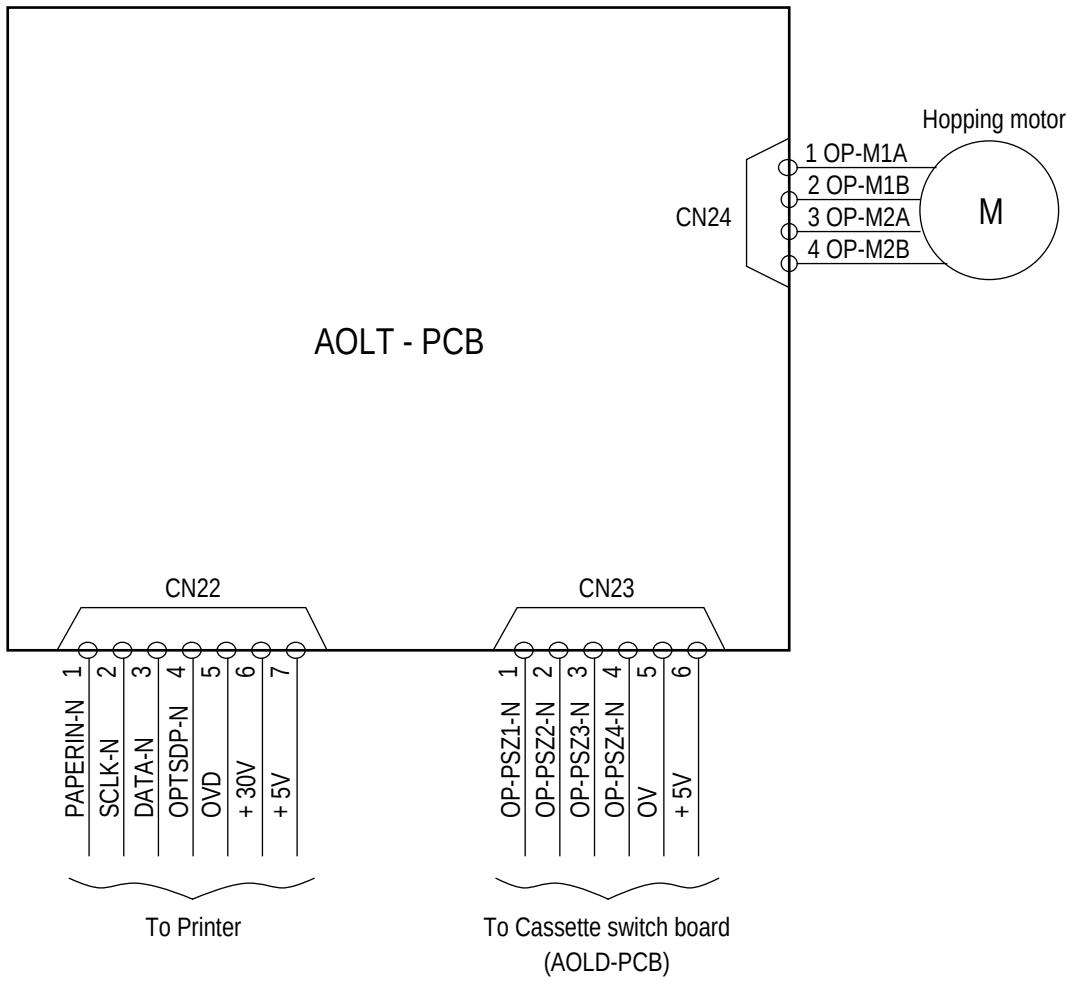
• (JAM error)

Paper Input Jam

- Does paper jam at the inlet when the power is turned on?
  - YES Is the paper located above the sensor plate (Inlet)?
    - YES Remove the paper.
  - NO Is the sensor plate (Inlet) operating normally?
    - NO Replace the sensor plate (Inlet).
  - YES Replace the power/sensor board or inlet sensor.
- NO When the paper is fed in, does the paper input jam occur?
  - YES Is the paper being fed to above sensor plate (Inlet)?
    - YES Is the sensor plate (Inlet) operating normally?
      - NO Replace the sensor plate. (Inlet)
    - YES Clean the inlet sensor on the power/sensor board or replace the power/sensor board or inlet sensor.
  - NO Replace the hopping roller shaft assy or paper cassette.
- NO Is the hopping roller shaft rotating?
  - YES Set the paper properly.
- NO Is the stepping motor turning?
  - YES Replace the one-way clutch gear on the hopping roller shaft assembly.
- NO Is the connector cable being connected properly?
  - NO Connect the connector cable properly.
- YES Check the coil resistance (approx. 4.3Ω) of the stepping motor. Is it normal?
  - NO Replace the stepping motor.
- YES Replace the AOLT-PCB.

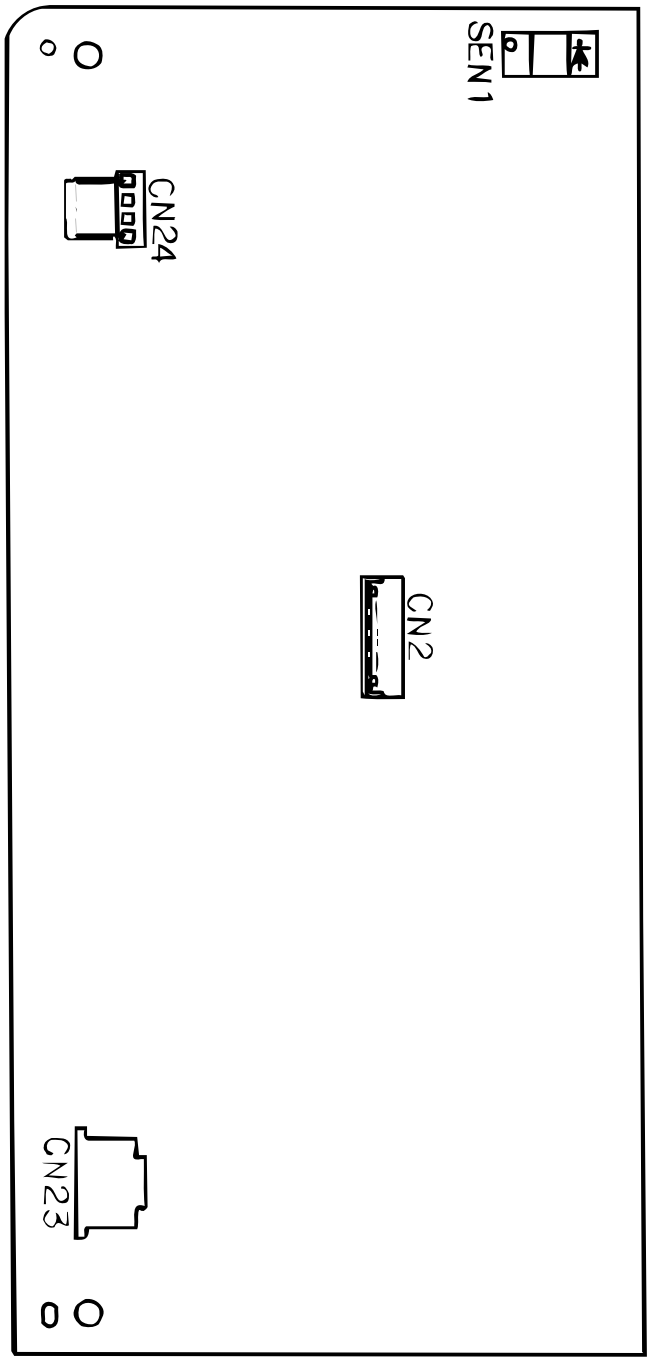
5. CONNECTION DIAGRAM

5.1 Interconnection Diagram



5.2 PCB Layout

AOLT-PCB



6. PARTS LIST

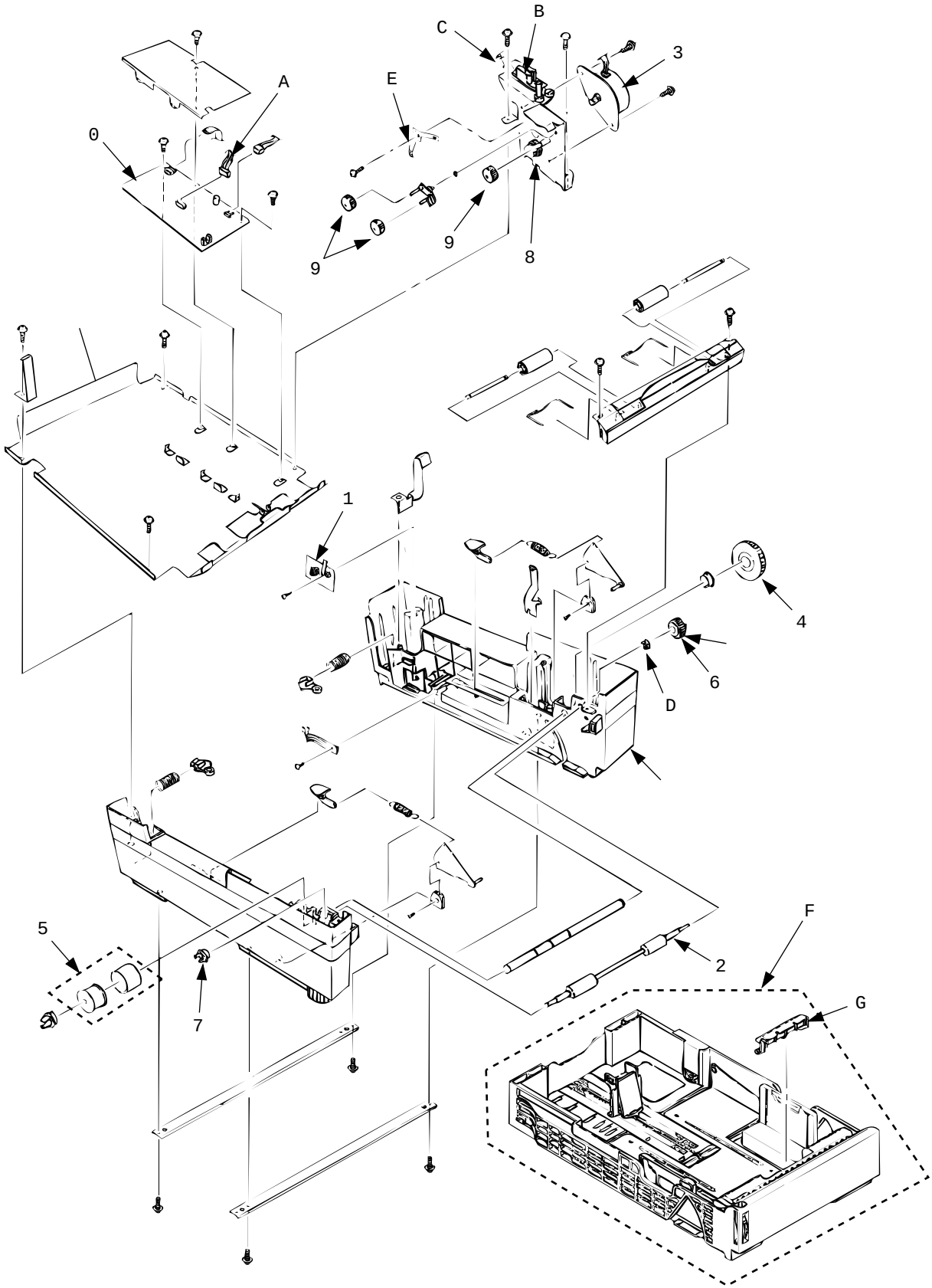


Table 6-1 High Capacity Second Paper Feeder

No.	Description	Part No.	Q'ty	Remarks
1	AOLD-PCB	4YA4046-1646G11	1	
2	Feed roller	3PB4076-5707P1	1	
3	Hopping motor	4PB4076-5718P1	1	
4	Hopping gear	4PB4043-4486P1	1	
5	Hopping roller assy	4PA4076-5755G1	1	
6	Feed roller gear	4PB4043-4488P1	1	
7	Feed roller bearing	4PP4043-4489P1	1	
8	Feed idle gear	4PP4076-5712P1	1	
9	Planet gear	4PP4043-4491P1	3	
10	AOLT-PCB	4YA4046-1645G11	1	
11	Connector cord	4YS4011-4448P3	1	
12	Square-shaped connector	220A1866P0141	1	
13	Earth plate	4PP4076-5717P1	1	
14	Bush	4PP4076-3949P1	1	
15	Shaft earth plate	4PP4076-5719P1	1	
16	Paper cassette assy	1PA4076-5430G1	1	
17	Separator frame assy	3PP4083-5663G1	1	

Appendix C
Multi Feeder Maintenance

PREFACE

This Maintenance Manual is intended for the service personnel and describes the field maintenance methods for Multi Feeder option of OKIPAGE16n LED Page Printer.

Refer to the USER'S MANUAL for equipment handling and operation methods.

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1. OUTLINE

1.1 Functions

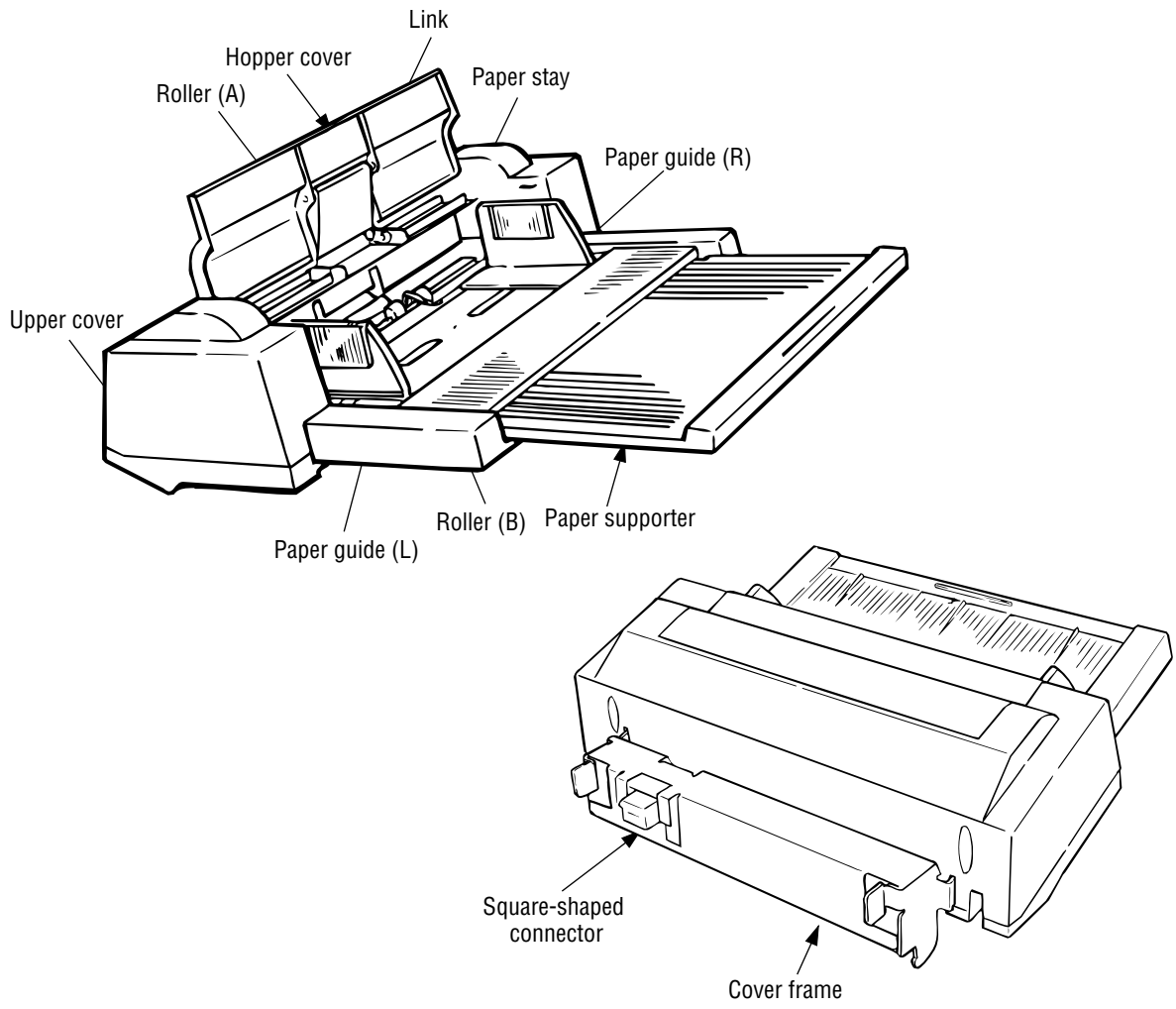
This Multi Feeder is installed on the front section of the printer, and it supplies paper automatically through the operation of hopping motor, which is driven by signals sent from the printer.
The main functions are the followings:

- Paper that can be used:

Paper type	Paper size	Quantity of paper
Plain paper	**A6 (106 x 148 mm) ~ A4**	**64 ~ 90 g/m^2**
Thick paper, OHP film		**64 ~ 90 g/m^2**
Post card, label sheet	**Post card ~ A4-size equivalent**	**64 ~ 128 g/m^2**
Envelope	**C5, DL, COM-10, COM-9, Monarch**	**64 ~ 90 g/m^2**

* approximately 50 sheets of envelopes can be set at a time.

1.2 External View and Component Names



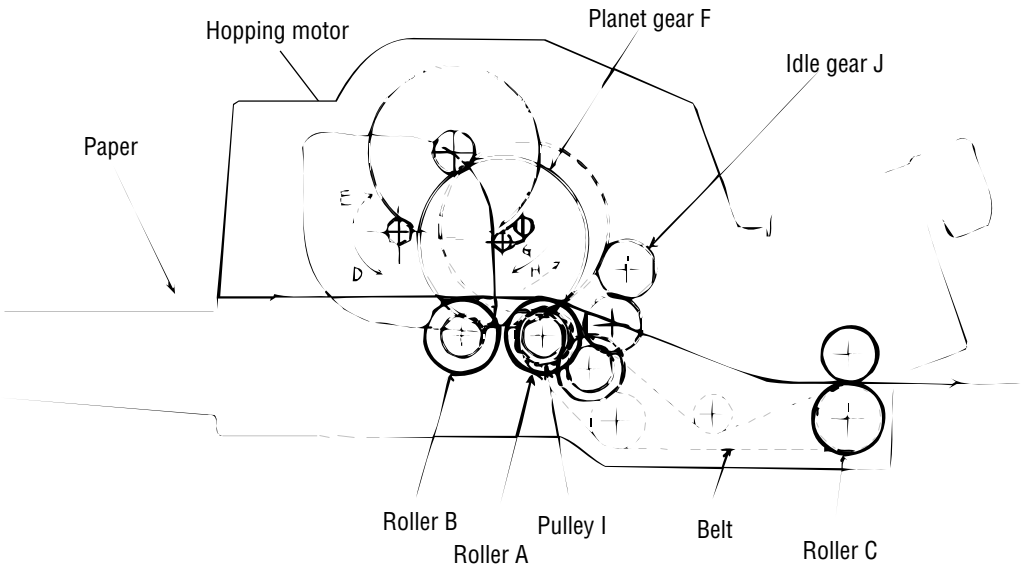
2. MECHANISM DESCRIPTION

2.1 General Mechanism

The sheet (or envelope) at the very bottom of the stack is fed into the printer, one at a time, when the Multi Feeder receives the signal from the printer.

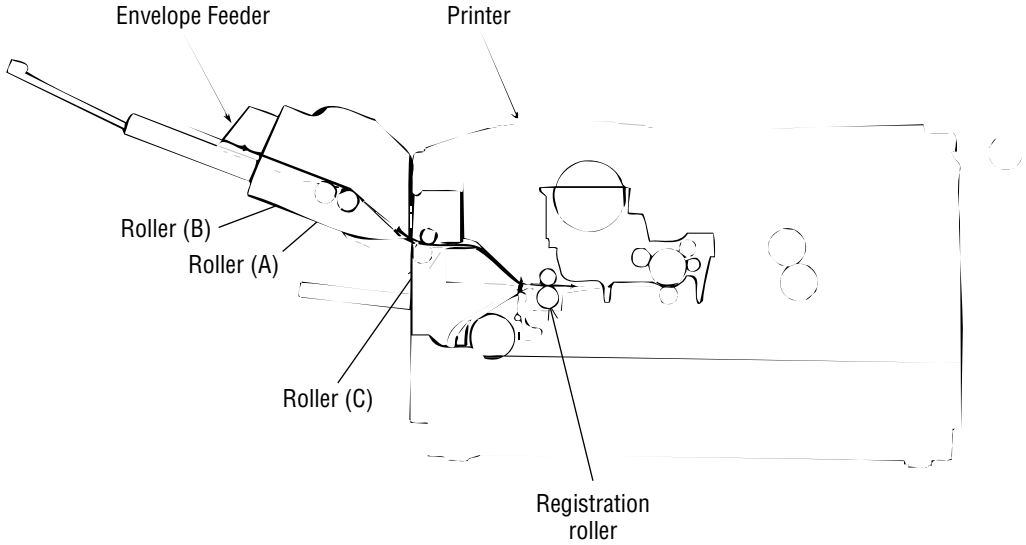
(1) First, the hopping motor rotates in the direction of arrow D. The planet gear F moves to the direction of arrow G, and drives rollers A and B. The roller C is linked to pulley I which is on the same shaft as roller A, and it also turns at the same time as roller A. The paper is fed for a predesignated distance until the leading edge reaches roller C.

(2) Next, the hopping motor rotates in the direction of arrow E. The planet gear F moves to the direction of arrow H, and drives idle gear J. The rotation of idle gear J is transmitted to the gears linked to it, and drives pulley I on the same shaft as roller A, turning roller C to feed the paper into the printer, until it reaches the registration roller of the printer. During this process, a one-way bearing is engaged at pulley I so that the rotation of pulley I is not transmitted to roller A, preventing any feeding of papers by roller A.



2.2 Hopper Mechanism

The hopper automatically feeds the printer with the paper being set, single sheet at a time.



3. PARTS REPLACEMENT

This section covers the procedures for the disassembly, reassembly and installations in the field. This section describes the disassembly procedures, and for reassembly procedures, basically proceed with the disassembly procedures in the reverse order.

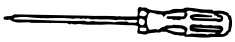
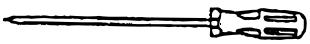
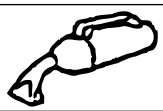
3.1 Precautions Concerning Parts Replacement

(1) Parts replacements must be carried out, by first turning the printer power switch off “O” and removing the Multi Feeder from the printer.
(2) Do not disassemble the Multi Feeder if it is operating normally.
(3) Establish the extent of disassembly suitable for the purpose of the procedure, and do not disassemble any more than necessary.
(4) Only specified service tools may be used.
(5) Disassembly must be carried out according to the prescribed procedures. Parts may be damaged if such procedures are not followed.
(6) Small parts such as screws and collars can easily be lost, therefore these parts should be temporarily fixed in the original location.
(7) When handling printed circuit boards, do not use any glove which may generate static electricity.
(8) Do not place the printed circuit boards directly on the equipment or floor.

[Service Tools]

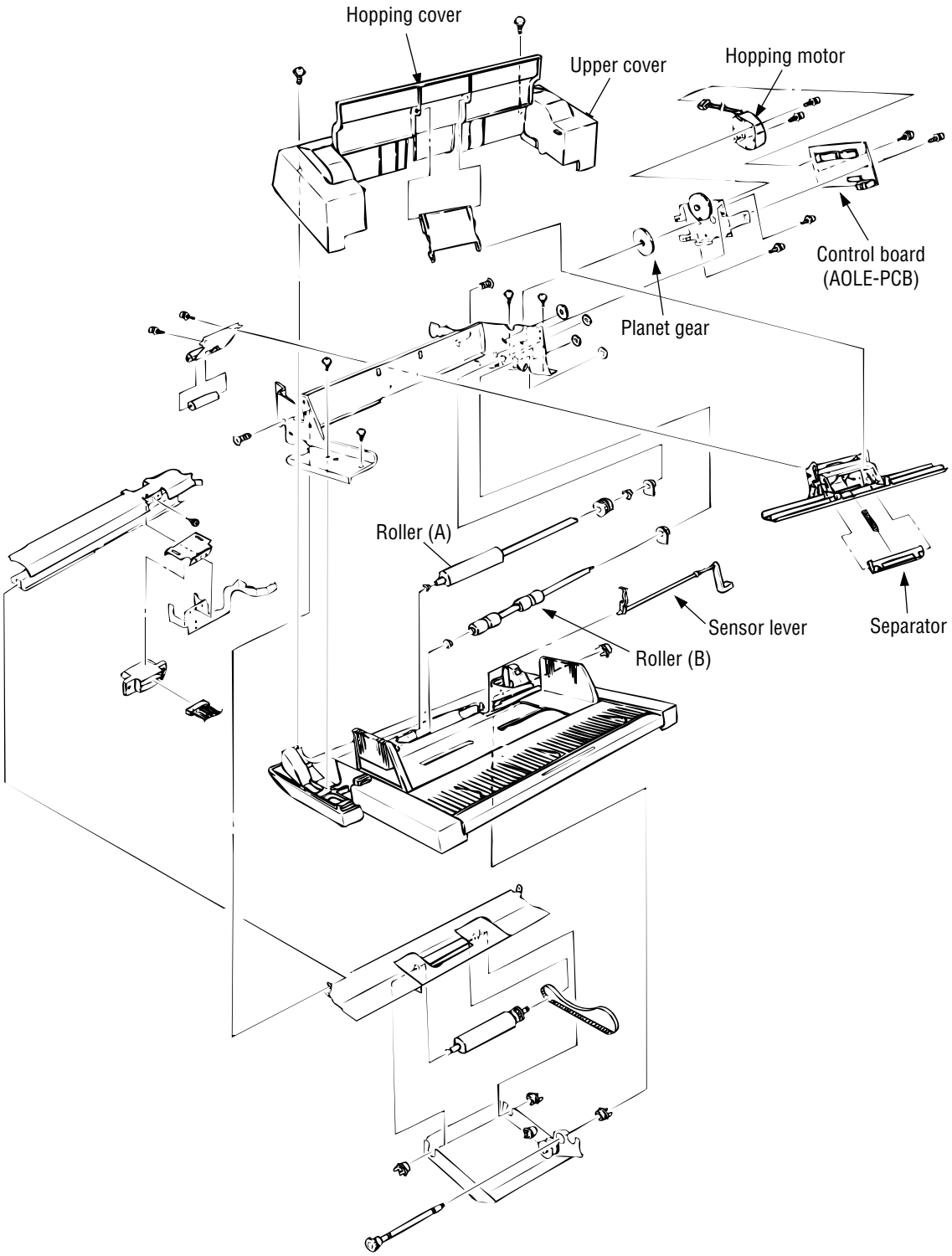
Table 3-1 shows the tools required for the replacement of printed circuit boards and units in the field.

Table 3-1 Service Tools

No.	Service Tools		Q'ty	Place of use	Remarks
1		No. 1-100 Philips screwdriver	1	2~2.5 mm screws	
2		No. 2-100 Philips screwdriver	1	3~5 mm screws	
3		No. 3-100 screwdriver	1		
4		No. 5-200 screwdriver	1		
5		Digital multimeter	1		
6		Pliers	1		
7		Handy cleaner	1		
8		Connector remover	1	OKI P/N: 4PP4076-5395P1	

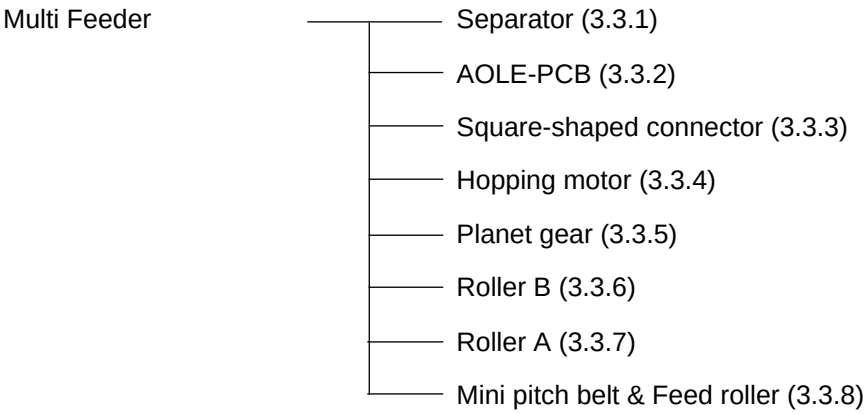
3.2 Parts Layout

This section describes the layout of the main components.



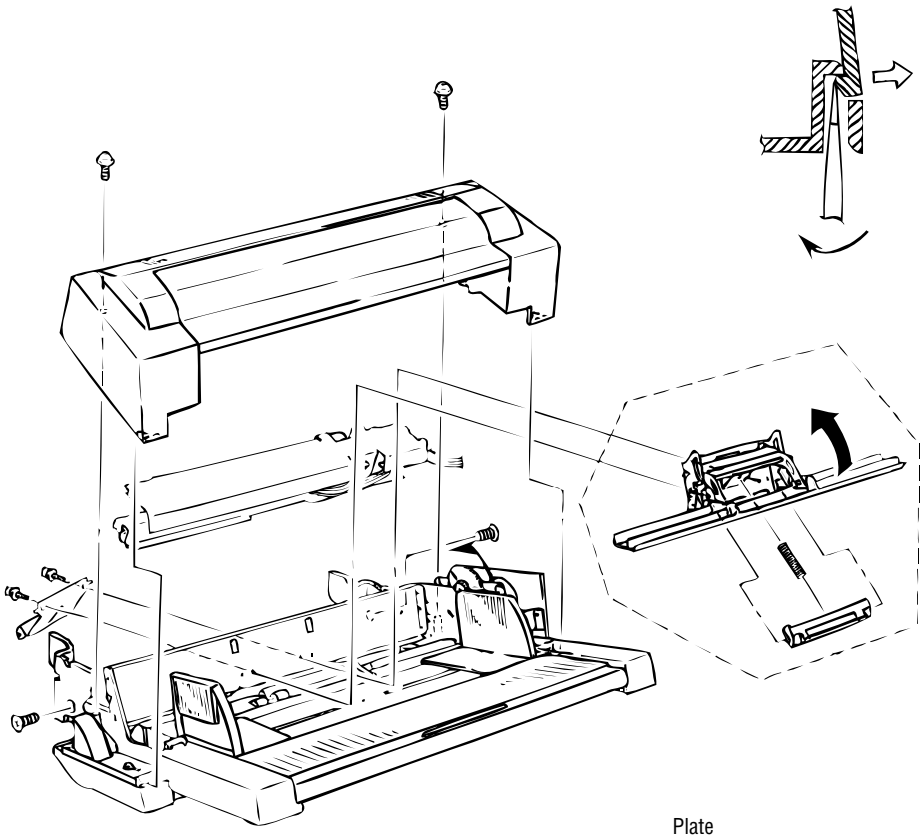
3.3 Parts Replacement Methods

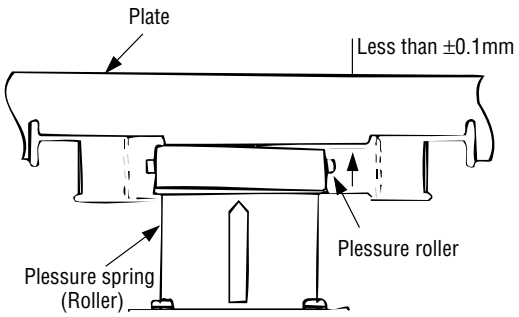
This section describes the parts replacement methods for the components listed in the disassembly order diagram below.



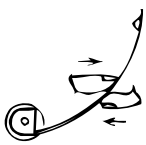
3.3.1 Separator

(1) Turn the printer power off and remove the Multi Feeder.
(2) Disengage the link and hopper cover.
(3) Remove two screws 1, disengage two locks of the upper cover 2 using a flat-head screwdriver, and remove the upper cover 2.
(4) Remove two pan-head screws 3 and remove the cover frame 4.
(5) Disengage the plate and the frame. (Refer to 3.3.6.)
(6) Remove two screws 5 and remove the separator assy 6.
(7) Lift the paper stay 7 and disengage it from the separator bracket 8, then remove the separator 9. The spring 0 comes off at the same time, so be careful not to lose it.





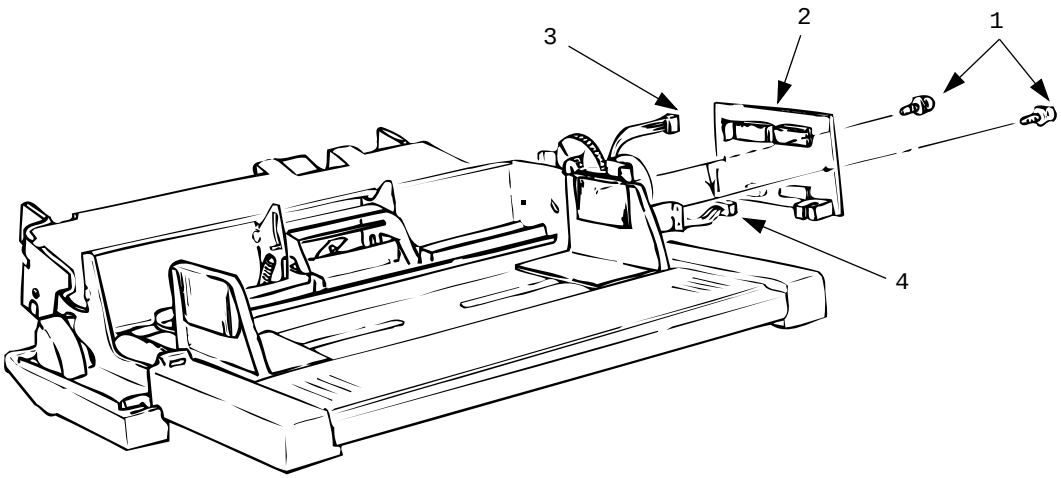
[Check at the time of assembly)



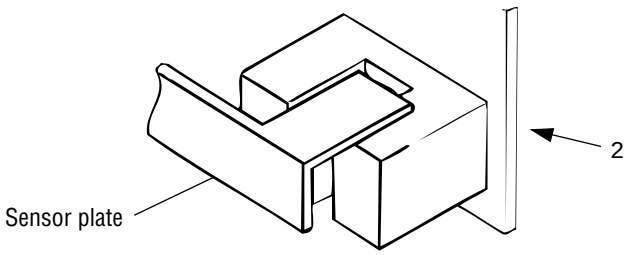
When the secondary stage of idle gear A is turned in the A direction after engaging the plate and the frame, the inclination of the pressure roller B is less than ±0.1 mm against the plate C, as shown in the right figure. When the inclination of the pressure roller exceeds ±0.1 mm, fine-adjust it by pressing with fingers, as shown in the left figure, with the pressure spring (roller) installed.

3.3.2 AOLE-PCB

(1) Remove the upper cover (see 3.1.1 (1) to (3)).
(2) Remove two screws 1 and remove the AOLE-PCB 2 .
(3) Remove the connector 3 .
(4) Remove the connector 4 .

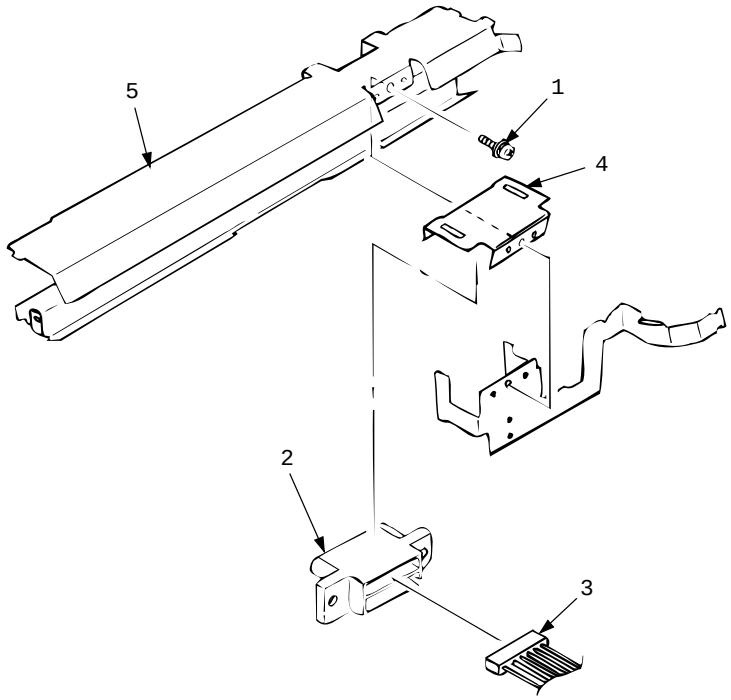


Caution: Be careful to set the sensor plate properly when mounting AOLE-PCB.



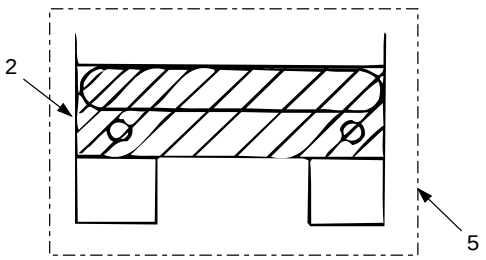
3.3.3 Square-shaped connector

(1) Remove the upper cover and remove the cover frame 5 (see 3.3.1 (1) to (4)).
(2) Remove the AOLE-PCB (see 3.3.2).
(3) Remove the screw 1 and remove the square-shaped connector 2 .
(4) Using the connector remover, remove the nylon cord 3 from the square-shaped connector 2 .

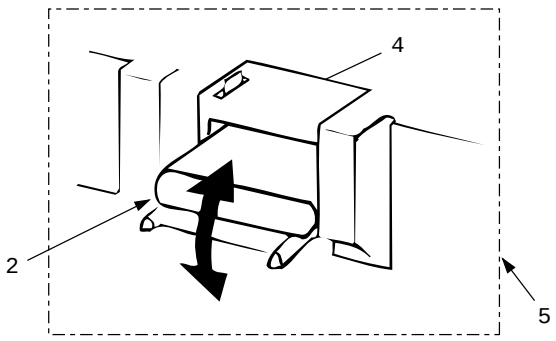


[Confirmation after assembly]

1. The square connector 2 should be horizontal to the cover frame 5 .

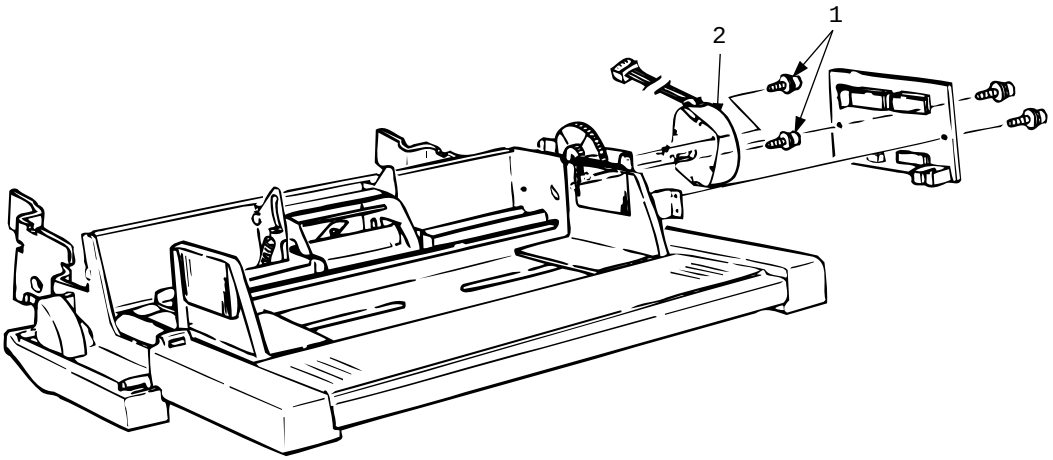


2. The square connector 2 should be hooked on the connector spring 4 and move smoothly.



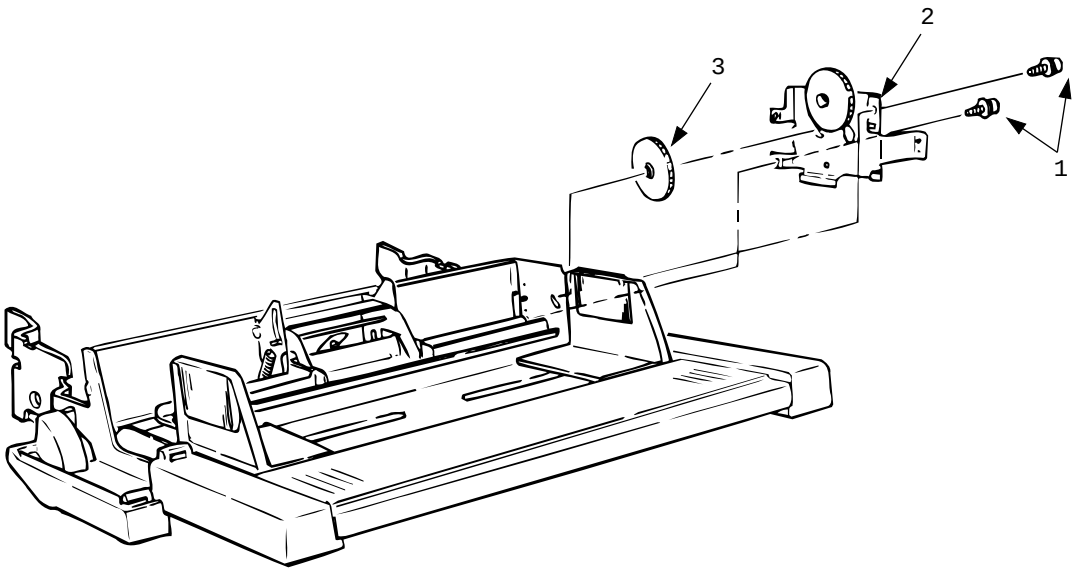
3.3.4 Hopping Motor

(1) Remove the upper cover (see 3.3.1 (1) to (3)).
(2) Remove the AOLE-PCB. (see 3.3.2)
(3) Remove two screws 1 , then remove the hopping motor 2 .



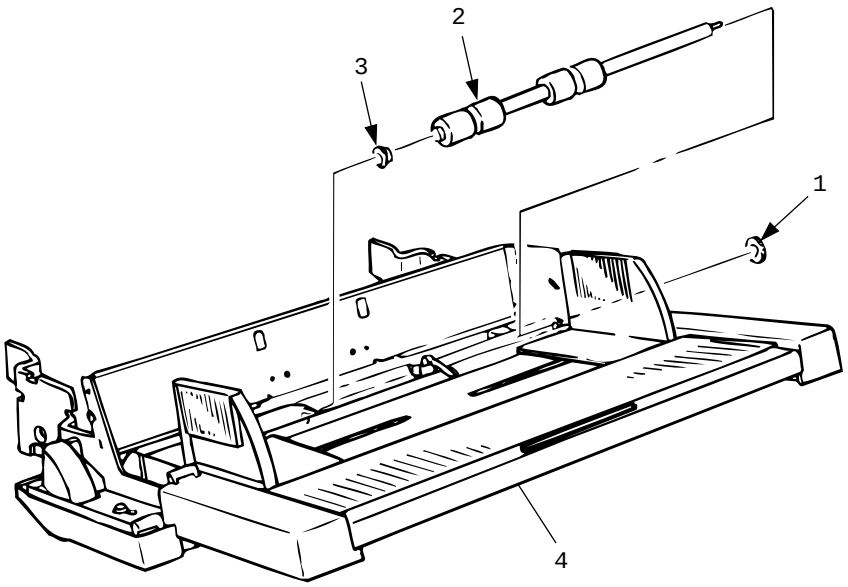
3.3.5 Planet gear

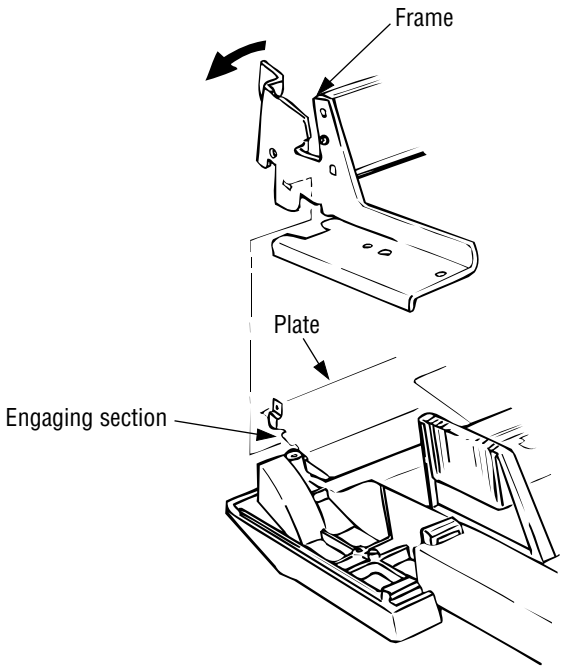
(1) Remove the upper cover (see 3.3.1 (1) to (3)).
(2) Remove the AOLE-PCB (see 3.3.2).
(3) Remove two screws 1 , then remove the motor bracket assy 2 and the planet gear 3 .



3.3.6 Roller B

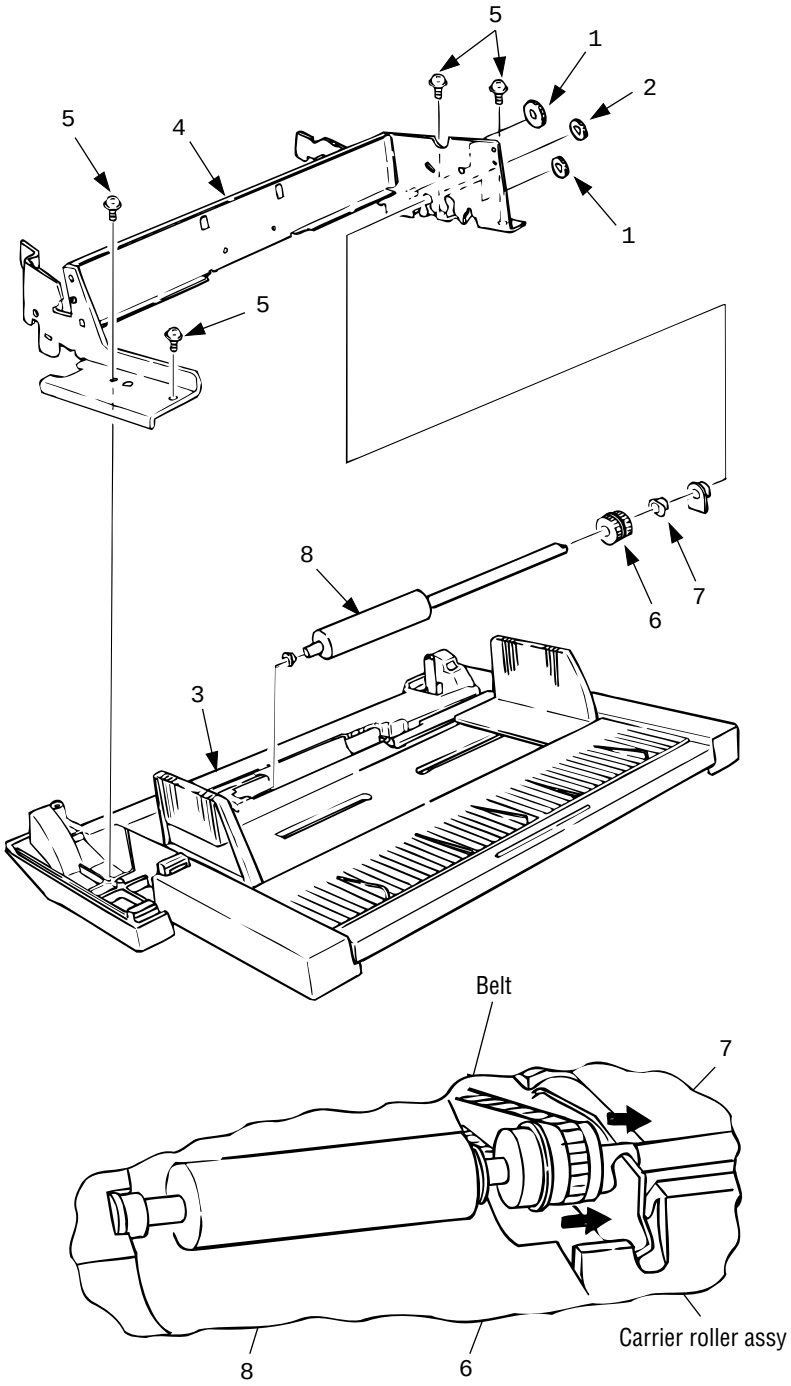
(1) Remove the upper cover (see 3.3.1 (1) to (3)).
(2) Disengage the plate and frame (on both sides).
(3) Remove the separator assy (see 3.3.1 (4) to (5)).
(4) Remove the AOLE-PCB (see 3.3.2).
(5) Remove the motor bracket assy (see 3.3.5).
(6) Remove the gear 1.
(7) Shift the roller B 2 to the right, lift it by holding on its left side, and pull it out to the left side. The bearing 3 also comes off at the same time, so be careful not to lose it. Further, pay special attention to make sure that you do not damage the sensor lever 4 while going through this procedure.





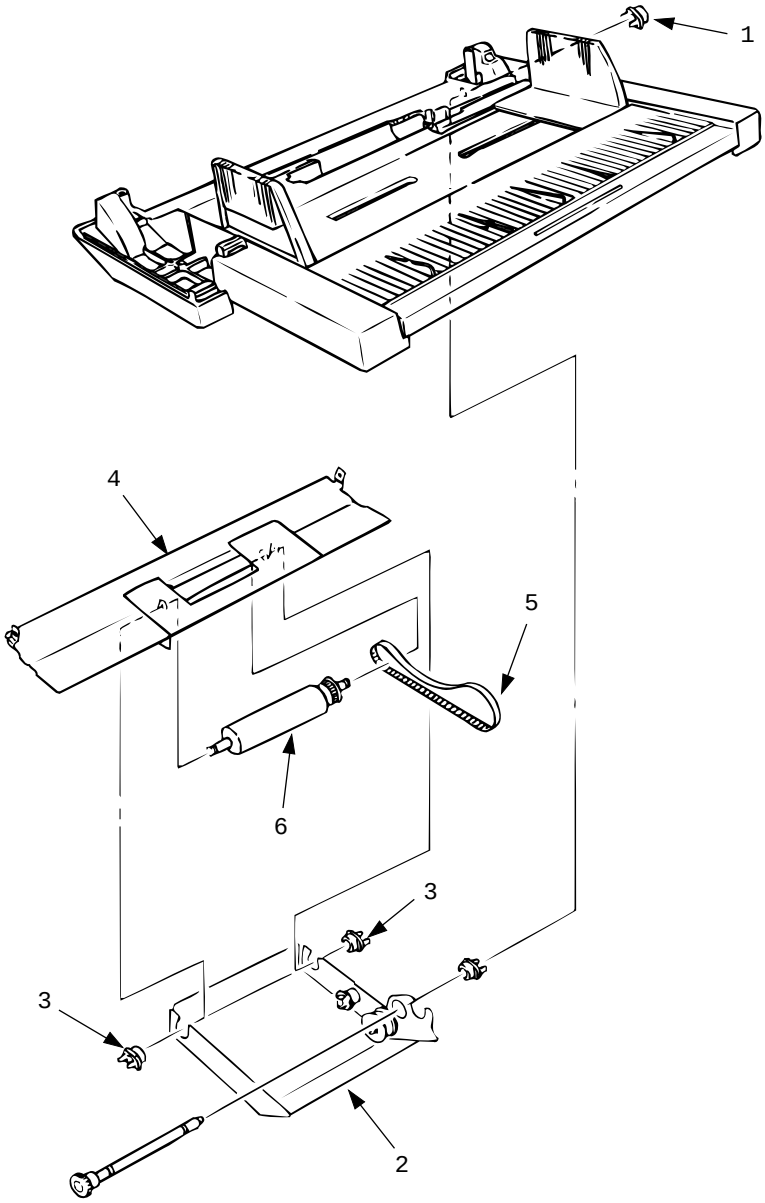
3.3.7 Roller A

(1) Remove the motor bracket assy (see 3.3.5).
(2) Remove two gears 1 and then another gear 2 .
(3) Disengage the plate 3 and the frame 4 .
(4) Remove four screws 5 and remove the frame 4 (see 3.3.6).
(5) Move the belt to the right and remove it from the one-way pulley 6 .
(6) Move the carrier roller assembly to the right, and remove it from the shaft 7 .
(7) Move the roller A 8 to the right, lift its left side, and then pull it off to the left. (Be careful not to lose the shaft 7 being removed together.



3.3.8 Mini pitch belt & Feed roller

(1) Remove the roller A (see 3.3.7).
(2) Remove the bearing 1 and remove the feed roller assy 2 .
(3) Remove two bearings 3 and remove the plate 4 .
(4) Remove the mini pitch belt 5 and the feed roller 6 .



4. TROUBLESHOOTING

4.1 Precautions Prior to the Troubleshooting

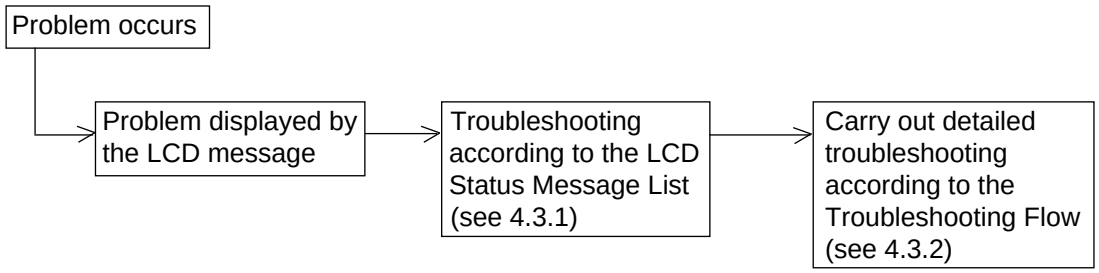
(1) Go through the basic checking items provided in the Operator Guide.
(2) Obtain detailed information concerning the problem from the user.
(3) Go through the checking in the conditions similar to that in which the problem occurred.

4.2 Preparations for the Troubleshooting

(1) Display on the operator panel
The status of the problem is displayed on the LCD (Liquid Crystal Display) on the operator panel. Go through the appropriate troubleshooting procedures according to the messages displayed on the LCD.

4.3 Troubleshooting Method

When a problem occurs, go through the troubleshooting according to the following procedure.


Problem occurs
Problem displayed by the LCD message
Troubleshooting according to the LCD Status Message List (see 4.3.1)
Carry out detailed troubleshooting according to the Troubleshooting Flow (see 4.3.2)

4.3.1 LCD Status Message List

The listing of the statuses and problems displayed in the form of messages on the LCD is provided in Table 4-1.

Table 4-1

Classification	LCD Status Message	Description	Recovery method
Jam error	PAPER INPUT JAM CHECK FEEDER PAPER FEED JAM CHECK FEEDER	Notifies of occurrence of jam while the paper is being fed from the Multi Feeder	• Check the paper in the Multi Feeder. Carry out the recovery printing by opening the cover, removing jammed paper and closing the cover, and then turning the error display off. • When the problem occurs frequently, to through the Trouble-shooting.
Paper size error	ERROR PAPER SIZE CHECK FEEDER	Notifies of incorrect size paper feeding from the Multi Feeder.	• Check the paper in the Multi Feeder. Also check to see if there was a feeding of multiple sheets. Carry out the recovery printing by opening the cover, removing paper and closing the cover, and then turning the error display off.
Tray paper out	PAPER OUT mmmmmmmm FEEDER mmmmmmmm: Paper size in the tray being selected	Notifies of no paper state of the Multi Feeder.	• Load the paper in the Multi Feeder.
Interface Timeout	ERROR CONTROLLER 81	Notifies of occurrence of interface timeout between the printer and the Multi Feeder.	• Verify connection of AOLE-PCB and square-shaped connector. Replace the square-shaped connector if necessary. • Replace AOLE-PCB.

4.3.2 Troubleshooting Flow

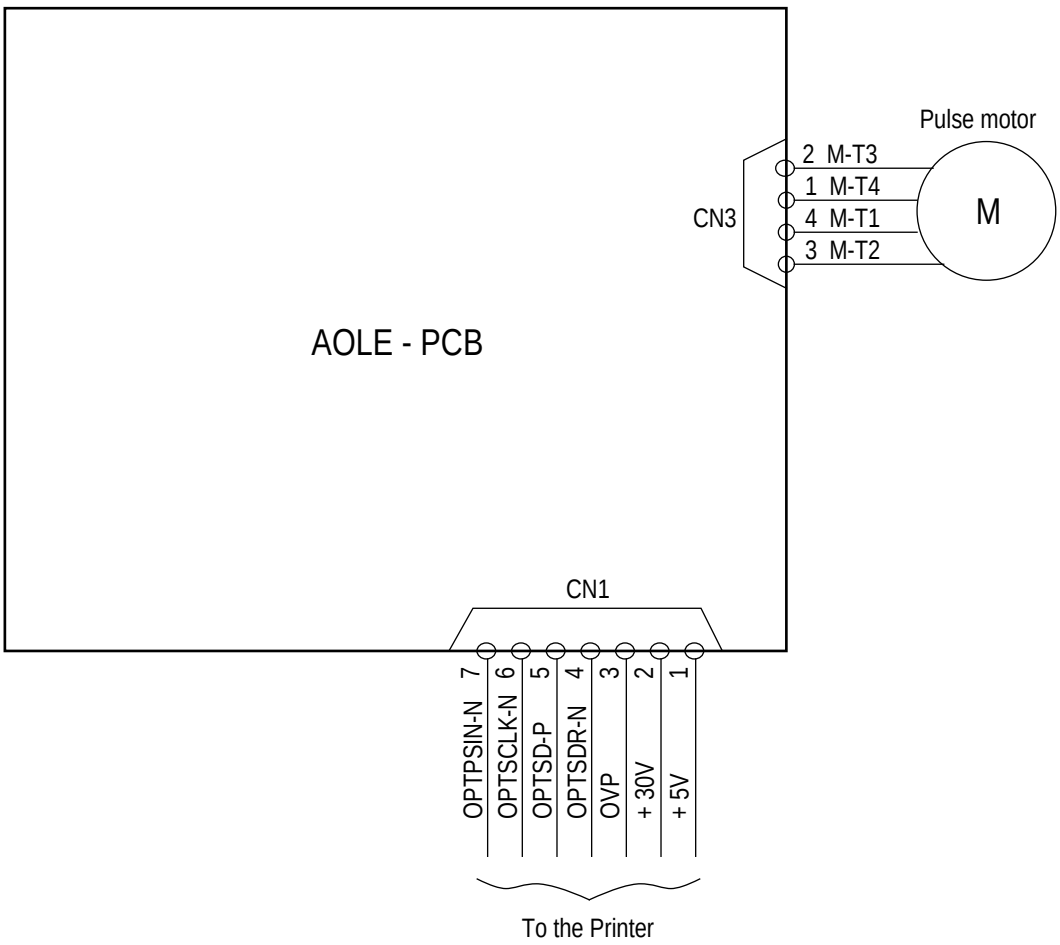
• (JAM error)

Paper Input Jam

- Does paper jam at the inlet when the power is turned on?
  - YES — Is the paper located above the sensor plate (Inlet)?
    - YES — Remove the paper.
  - NO — Is the sensor plate (Inlet) operating normally?
    - NO — Replace the sensor plate (Inlet).
  - YES — Replace the power/sensor board or inlet sensor.
- NO — When the paper is fed in, does the paper input jam occur?
  - YES — Is the paper being fed to above sensor plate (Inlet)?
    - YES — Is the sensor plate (Inlet) operating normally?
      - NO — Replace the sensor plate (Inlet).
    - YES — Clean the Inlet sensor on the power/sensor board or replace the power/sensor board or Inlet sensor.
  - NO — Replace the feed roller, roller-A or roller-B.
- NO — Are the feed roller, roller-A and roller-B rotating?
  - YES — Set the paper properly.
- NO — Is the belt torn?
  - YES — Replace belt.
- NO — Is the pulse motor turning?
  - YES — Replace planet gear.
- NO — Is the connector cable being connected properly?
  - NO — Connect the connector cable properly.
- YES — Check the coil resistance (approx. 32Ω) of the stepping motor. Is it normal?
  - NO — Replace the stepping motor.
- YES — Replace the AOLE-PCB.

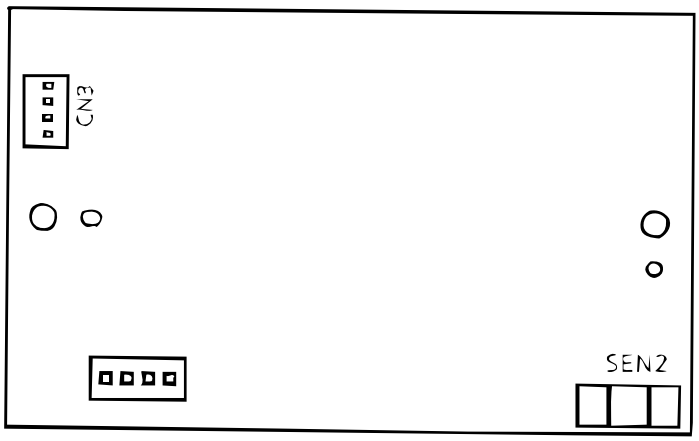
5. CONNECTION DIAGRAM

5.1 Interconnection Diagram



5.2 PCB Layout

AOLE-PCB



6. PARTS LIST

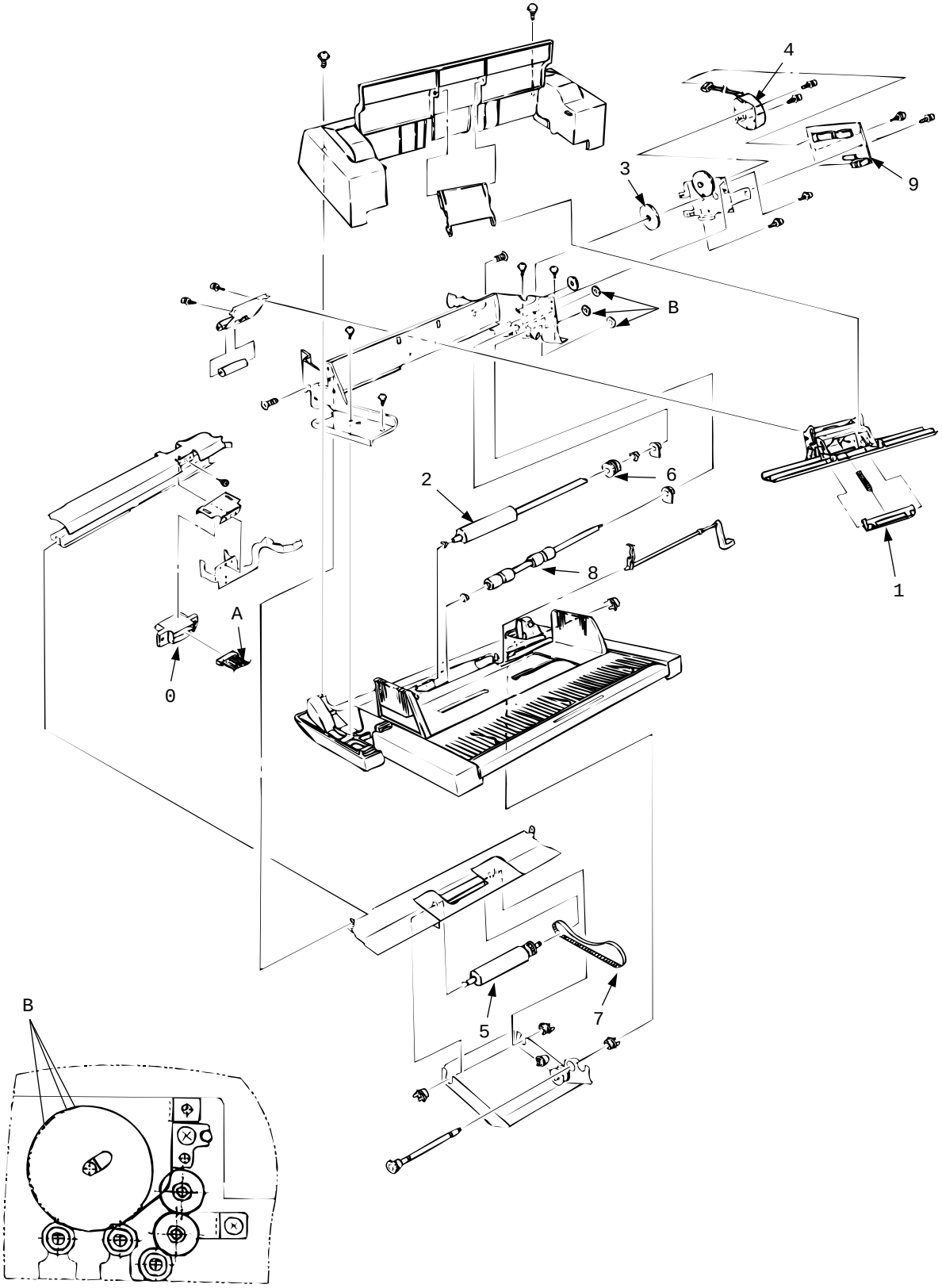


Table 6-1 Multi Feeder

No.	Description	Part No.	Q'ty	Remarks
1	Separator	4PP4083-5544G1	1	
2	Roller-A	3PB4083-5514P1	1	
3	Planet gear	4PP4083-5520P1	1	
4	Hopping motor	4PB4083-6075P1	1	
5	Roller-C	3PB4083-5524P1	1	
6	One-way pulley	4PB4043-4614P1	1	
7	Mini pitch belt	4LP-1313-338	1	
8	Roller-B	4PB4043-4743P1	1	
9	AOLE-PCB	4YA4046-1647G11	1	
10	Square-shaped connector	220A1866P0141	1	
11	Nylon connector cord	4YS4011-4448P4	1	
12	Stirrer roller gear	4PP4083-2394P1	3	

Appendix D LocalTalk Serial Interface

(Available only when a PostScript board is mounted.)

1) Connector

- Printer side : 8-pin mini DIN receptacle
  Type TCS7187-01-201 (made by HOSHIDEN) or equivalent
- Cable side : 8-pin mini DIN plug
  Type TCP7180-01-110 (made by HOSHIDEN) or equivalent

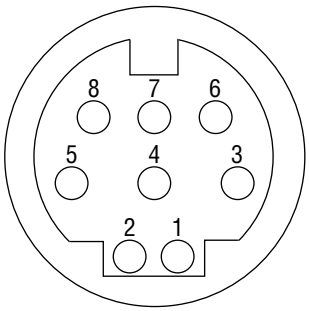
2) Cable

- To be shielded cable
- Cable length
  LocalTalk
  Defined max. length : 1,000 ft. (305 m) (It is the maximum length for a LocalTalk network.)
  Recommended max. length : 10 ft. (3 m) (For noise prevention)

3) Interface signal

Pin No.	Signal Name	Abfreviation	Signal Direction	Description
1	–			(Not used)
2	Sync. signal	SYNC	← PR	(Not used)
3	Transmit data minus	TxD-	← PR	Transmit data minus polarity
4	Signal ground	SG		Signal ground
5	Receive data minus	RxD-	→ PR	Receive data minus polarity
6	Transmit data plus	TxD+	← PR	Transmit data plus polarity
7	–			(Not used)
8	Receive data plus	RxD+	→ PR	Receive data plus polarity

• Connector Pin Arrangement



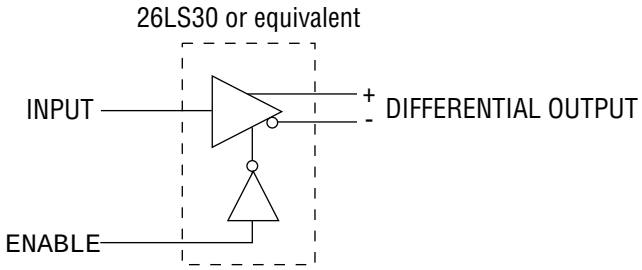
(As viewed from the cable side)

4) Signal level

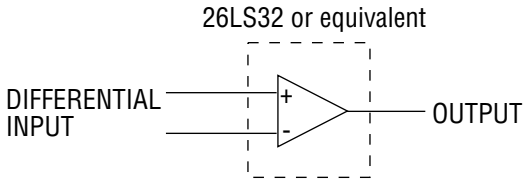
Differential output : ±5V
Differential input : ±7V

5) Interface circuit

a) Receiving circuit



b) Transmitting circuit



6) Receive margin

7) Communication protocol
• LocalTalk I/F
LocalTalk protocol